A NEW ORDER OF THINGS: HAP ARNOLD'S APPROACH TO AIRPOWER INNOVATION 1907-1938

A Monograph

by

LTC Anthony W. Hudson
United States Army

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

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How does the U.S. Army implement new technologies into the military establishment given increasingly scarce resources and parochial views? The development of airpower during the interwar period provides a good example of how to meet the challenges of organizational leadership in guiding innovation on a large scale. During this period, early airpower leaders faced one of the greatest challenges to innovation in American history, that of implementing the new technology of aviation. This paper surveys General of the Air Force Henry H. "Hap" Arnold's example of organizational leadership of innovation during a time of extreme transformation similar to the period the Army is about to enter.

Arnold's education, experience, and relationships with both civilian and military aviation pioneers taught him how to create organizational change. Examples of airpower leaders showed him which approaches were most effective and which ones would court disaster. Working from within the Army system, Arnold successfully restructured Army aviation and shepherded the innovation required for success in the Second World War.

This study assesses Arnold's approach to airpower innovation using current doctrine and academic leadership models. The monograph begins by contrasting Colonel Billy Mitchell's failed approach to Army airpower innovation with the relative success of Admiral William Moffett's approach in the Navy. The study then assesses Arnold's approach to innovation.

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Name of Candidate: LTC Anthony W. Hudson

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Approved by:

_____, Monograph Director
Christopher N. Prigge, COL, Ph.D.

_____, Seminar Leader
Jerry A. Turner, COL

_____, Director, School of Advanced Military Studies
Henry A. Arnold III, COL

Accepted this 22nd day of May 2014 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

ABSTRACT

A NEW ORDER OF THINGS: HAP ARNOLD'S APPROACH TO AIRPOWER INNOVATION 1907-1938, by LTC Anthony W. Hudson, 64 pages.

How does the U.S. Army implement new technologies into the military establishment given increasingly scarce resources and parochial views? The development of airpower during the interwar period provides a good example of how to meet the challenges of organizational leadership in guiding innovation on a large scale. During this period, early airpower leaders faced one of the greatest challenges to innovation in American history, that of implementing the new technology of aviation. This paper surveys General of the Air Force Henry H. "Hap" Arnold's example of organizational leadership of innovation during a time of extreme transformation similar to the period the Army is about to enter.

Hap Arnold was not a likely leader of innovation in his first two decades of Army service. As an early protégé of the infamous Colonel William "Billy" Mitchell, Arnold was exiled to Fort Riley, far from the aviation mainstream, after testifying on behalf of the defense in Mitchell's controversial court-martial. Although his career should have ended quietly, Arnold continued to impress his commanders with his performance and was selected to attend the Army's highly competitive Command and General Staff School. Arnold's education, experience, and relationships with both civilian and military aviation pioneers taught him how to create organizational change. Examples of airpower leaders showed him which approaches were most effective and which ones would court disaster. Working from within the Army system, Arnold successfully restructured Army aviation and shepherded the innovation required for success in the Second World War.

This study assesses Arnold's approach to airpower innovation using current doctrine and academic leadership models. The monograph begins by contrasting Colonel Billy Mitchell's failed approach to Army airpower innovation with the relative success of Admiral William Moffett's approach in the Navy. The study then assesses Arnold's approach, highlighting successes, and extracting lessons that future leaders may apply to innovation.

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INTRODUCTION

> There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order; this lukewarmness arising partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.
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> —Niccolo Machiavelli, *The Prince*

The development of airpower during the interwar period presents an excellent case study for understanding the importance of organizational leadership in guiding innovation. Airpower leaders of the period faced one of the greatest challenges to innovation in American history. The question was how to implement the new technology of aviation into the military establishment given the challenges of scarce resources and parochial views of the War Department. Airpower was not the only innovation struggling for relevance at the time. In the two decades following the First World War, the War Department experimented with application of many innovations including armored and mechanized forces and composition of division-sized units but airpower posed a peculiar challenge in that it engaged a domain that was completely new.

Until December 1916, combined operations, now known as joint operations, could only mean cooperation between the Navy and Army. However, this period, for the first time since humans used boats in war, saw the expansion of a new exploitable battle space—the air. Air operations have now become so common that familiarity has tended to dull appreciation of the monumental changes in warfare that airpower introduced.[1] Such an innovation required unprecedented vision and leadership for successful implementation. This study will survey that vision and leadership as applied by airpower's most successful officer, General of the Air Force Henry Harley "Hap" Arnold.

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[1]Colin S. Gray, *Another Bloody Century: Future Warfare* (London, UK: Phoenix, 2006) 155.

In his first two decades of Army service, Hap Arnold was not a likely leader of innovation. In November 1925, after an already turbulent career, Major Henry Arnold testified in support of a fellow Army Air Service advocate even though his superiors advised him that doing so would likely end his career. The advocate was Colonel Billy Mitchell who was on trial for conduct prejudicial to good order and discipline after speaking out publicly against senior military leadership concerning administration of airpower. While narrowly avoiding court-martial for subsequent insubordinate actions in support of Mitchell's cause, Arnold was exiled to Fort Riley, far from the aviation mainstream, where his career was expected to end quietly. However, Arnold's performance continued to impress his commanders, and he was selected to attend the Army's highly competitive Command and General Staff School (CGSS) after less than two years at Fort Riley.[2]

In August of 1928, Arnold attended CGSS despite protests from the school's commandant as well as other high-ranking Army leaders. After a yearlong struggle over doctrinal differences with the commandant, Arnold graduated CGSS with high marks in June of 1929. He went on to fill critical command and staff positions including Chief of Field Services, command of the First Air Wing, Assistant Chief of the Army Air Corps, and Chief of the Army Air Corps in September 1938, which carried a promotion to Major General.

Thus, following his experience at CGSS, Arnold turned his career around and rose to the rank of Major General in less than nine years. Written off as one of aviation's revolutionaries, Arnold should not have survived to become a great innovation leader but his attendance at CGSS was the turning point in his career where he began cultivating support for his views on Army aviation and airpower. This critical period is where he learned to become an agent of change, ushering in innovations in airpower by rebuilding his reputation and forging critical long-term

[2]Thomas M. Coffey, *HAP: The Story of the U.S. Air Force and The Man Who Built It, General Henry "Hap" Arnold* (New York: Viking Press, 1982), 123-128.

relationships with key future Army leaders. However, Arnold's transformation began long before his CGSS experience. His relationships with both civilian and military aviation pioneers taught him how to create organizational change while the examples of airpower leaders taught him what approaches to organizational change were effective and what approaches would court disaster. Working from within the Army system, Arnold successfully restructured Army aviation and shepherded the innovation required for success in the Second World War.

This monograph will demonstrate how General Arnold's professional military education, experience and relationships shaped his abilities as a leader in the U.S. Army Air Corps and enabled him to excel as an innovator and aviation pioneer, culminating with his appointment as its chief. Using current Army leadership doctrine and General Donn A. Starry's organizational leadership model, the study will assess Arnold's evolving approach to innovation. The monograph begins with a brief discussion of innovation and leadership in order to define the terms of the study. It then addresses the state of aviation from Arnold's commissioning in 1907 through the difficult and slow expansion of American airpower between 1918 and 1929. The monograph then describes Arnold's experience before, during, and after CGSS including his early aviation assignments, his professional education, and the relationships he forged at CGSS with faculty and fellow students from other branches of the Army. Finally, the monograph examines Arnold's application of lessons learned after CGSS and his approach to innovation in the Army Air Corps prior to the Second World War.

INNOVATION AND LEADERSHIP

Innovation is always controversial. It is by its nature problematic and usually brings conflict between the status quo and the innovator's vision of the future. The organizational leader must understand the dynamics of change and lead a large bureaucracy towards realizing that

vision. Vision and goals act as the beacon and control system that keeps an organization moving forward on course during times of change rather than spinning out of control into chaos.[3] Vision may be essential to innovation but it is not the most important element. Any vision absent an understanding of the critical roles of leadership and relationships is sure to be rejected. A revolutionary approach to innovation that disregards the status quo is guaranteed to fail. The most effective approach involves a deliberate evolution, which requires a fundamental restructuring of the entire system into something completely new.

From an industrial perspective, engineers say that a new idea has been "invented" when it is proven to work in the laboratory. The idea becomes an "innovation" only when it can be replicated reliably on a meaningful scale at practical costs. If the idea is sufficiently important, such as the telephone, the digital computer, or commercial aircraft, it is called a "basic innovation," and creates a new industry or transforms an existing one. In these terms, Army aviation was invented along with the birth of the airplane in 1903 but its innovation struggled along for decades before the technology matured to meet the vision of early aviation theorists.[4]

Although controversial, innovation is necessary for the long-term health of any organization. According to military writer Colin Gray, "Technological change has long been routinized and rendered transnational by the complex processes of diffusion. Innovation happens. It is countered by emulation, adaptation by other cultures, or evasion, and there is no final move."[5] Given this strategic perspective, it is clear that innovation is critical to the survival of any military institution. Innovation is vital to maintaining relevance for the organization in times of peace, as well as a requirement for survival in combat.

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[3]Tom Peters, *Thriving on Chaos: Handbook For A Management Revolution* (New York: Alfred A. Knopf, 1988), 403-404.

[4]Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday Press, 1990), 6.

[5]Gray, *Another Bloody Century*, 103.

Former Chief of Staff of the Army, General Gordon R. Sullivan addresses innovation in his writings on organizational change. He states that, in order to change, the organizational leader must create an innovation-friendly environment. According to Sullivan, without innovation, an organization will stagnate, adopt status quo, and avoid any appearance of change.[6] In this context, organizational change is simply the evolution of an organization, whether rapid or deliberate, while innovation represents the ideas or technologies that serve as the catalyst for that evolution. The challenge in implementing innovation at an organizational level is tied to the multiple paradigms within the varying subcultures of the institution.[7]

Innovation in any field requires a paradigm shift for the entire organization. Scientist and philosopher Thomas Kuhn defines the way the members of a professional community view the world as the constellation of beliefs, values, techniques, and ways of looking at and solving problems shared by the members of a given community. This is the essence of what makes a particular community distinctive. Individuals belonging to the same community usually share the same sort of education, language, experience, and culture and will tend to share the same worldview. They will apply their experiences in solving previous problems toward solving new ones, in other words, "a paradigm—the constellation of beliefs and a way of looking at the world that the members of a professional community share."[8]

A paradigm shift requires strategic leadership. The more entrenched in orthodoxy an institution is, the more dramatic effects the paradigm shift creates. Such shifts will be rejected if not properly managed through slow deliberate processes of change. Leadership is the process of

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[6]Gordon R. Sullivan, "Leading Strategic Change In America's Army: The Way Forward," *Planning Review*, 23, no. 5 (1995): 16-19.

[7] Jerry A. Turner, "To Strive, To Seek, To Find, And Not Yield: How Chiefs of Staff of the Army Lead Change," (Fort Leavenworth, KS: School of Advanced Military Studies, 2013), 9.

[8]Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: The University of Chicago Press, 1970), 175-176.

influencing people by providing purpose, direction, and motivation to accomplish the mission and improve the organization.[9] This requires strategic vision and patience. According to the Army's most recent leadership doctrine, in order to create powerful organizations capable of adapting, strategic leaders must develop networks of knowledgeable individuals who can positively shape their own organizations. Through continuous assessments, strategic leaders must seek to understand the personal strengths and weaknesses of the main players on a particular issue. Strategic leaders influence external events by providing quality leadership, timely and relevant information, and access to the right people and agencies.[10]

Where innovation and institutional change is concerned, successful organizational leaders must build on direct leader experiences, reflect the institution's values, and instill pride within organizations. Since they lead complex organizations throughout the operational and generating force, Army organizational leaders often must apply elements of direct, organizational, and strategic leadership simultaneously. Modern organizational level leaders must carefully extend their influence beyond the chain of command by balancing their role as soldier with that of a diplomat in uniform.[11]

Additionally, innovation requires vision, communication, and trust. Writer John P. Kotter describes two challenges in communicating organizational change. First, he says that in order for change to take place there needs to be a shared sense of a desirable future—a vision. Both leaders and subordinates need to see personal, professional, and organizational benefits to reach the vision's future. Second, he describes the two pitfalls to reaching that vision—under communication and inconsistent messages. Under communication means the message fails to

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[9]Department of the Army, Army Doctrine Reference Publication No. 6-22 (ADRP 6-22), *Army Leadership* (Washington, DC: Headquarters Department of the Army, 10 September 2012), 1-1.

[10]Ibid., 11-2.

[11]Ibid., 10-1.

reach every potential supporter of the new idea, whether in the organization or external to it. Inconsistent messages cause different groups to drive in different and perhaps opposite directions and is counterproductive to the vision.[12] According to Stephen M. R. Covey, as a leader increases trust in an organization, opportunity to achieve change increases proportionally. He argues that an increase in trust has a direct correlation to the speed of change. The reverse is also true in that a lack of trust between the leader and the subordinates of an organization increases the cost and decreases the speed of change. In the case of the Army, this idea also applies to the trust relationship between the Army's senior leaders and civilian leadership.[13]

General Donn A. Starry, former commanding general of the US Army Training and Doctrine Command who is widely credited as one of the leading architects of the post-Vietnam transformation, agrees with Kotter and Covey. In assessing innovation in the European armies during the interwar period, he developed a set of generalized requirements for effecting organizational change.[14] Starry notes that the first requirement for an organization to begin change is for it to create an institution or mechanism to identify the need for change. Secondly, the organization's leadership must have a common educational background in order to avoid cultural bias. Next, there must be a spokesperson for change. That spokesperson must build consensus that will give the new ideas a wider audience of converts and believers. Continuity among the architects of change then becomes essential in order to maintain consistency of effort in the process. Finally, the changes identified must be subjected to open trials observable by a wide audience.[15]

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[12]John P. Kotter, *Leading Change* (Boston, MA: Harvard Business School Press, 1996), 15.

[13]Stephen M.R. Covey, *The Speed of Trust: The One Thing That Changes Everything* (New York: Free Press, 2006), 41-42.

[14]Turner, "To Strive, To Seek, To Find, And Not Yield," 8-15.

[15]Donn A. Starry, "To Change an Army," *Military Review* 63, no. 3 (1983): 20-27.

In summary, innovation is both controversial and necessary for the long-term health and survival of any organization. Guiding innovation on a large scale requires a paradigm shift for the organization and its leaders. Innovation in the Army requires diplomatic leadership using direct, organizational, and strategic approaches, both within and outside the chain of command. Innovation requires more than just vision. It requires communication of that vision along with organizational and individual trust. Without trust in the vision and in the spokesperson for change, the organization will resist the innovation and stagnate, remaining entrenched in the status quo.

Kotter's vision and messaging themes, Covey's *Speed of Trust* theme, and Starry's organizational change model, all nest well with the Army's latest leadership doctrine. Therefore, this study will assess Arnold's approach to airpower innovation using Starry's model while capturing the applicable points from all four perspectives. In order to frame the environment, the monograph will first examine the innovation of early air power. It will then survey two approaches by contrasting Colonel Billy Mitchell's approach to Army airpower innovation with that of Admiral William Moffett's approach in the Navy. The study will then assess Arnold's approach using the same standard, highlighting successes and extracting lessons that may be applied in the future.

INNOVATION OF EARLY AIRPOWER

Army Aviation

ADVERTISEMENT AND SPECIFICATION FOR A HEAVIER-THAN-AIR FLYING MACHINE

This specification covers the construction of a flying machine supported entirely by the dynamic reaction of the atmosphere and having no gas bag.
It is desirable that the flying machine should be designed so that it may be quickly and easily assembled and taken apart and packed for construction in army wagons. It should be capable of being assembled and put in operating condition in about one hour.
The flying machine must be designed to carry two persons having a combined weight of about 350 pounds, also sufficient fuel for about 125 miles.
The flying machine should be designed to have a speed of at least 40 miles per hour in still air. Before acceptance, a trial endurance flight will be required of at least one hour during which time the flying machine must remain continuously in the air without landing. During this flight, it must be steered in all directions without difficulty and at all times under perfect control and equilibrium.
It should be sufficiently simple in its construction and operation to permit an intelligent man to become proficient in its use within a reasonable length of time.
The price quoted in proposals must be understood to include the instruction of two men in the handling and operation of this flying machine. No extra charge for this service will be allowed.[16]

—*SIGNAL OFFICE, Washington D.C., December 23, 1907*

It is difficult to appreciate the radical idea that early aviation represented to the Army establishment. At best, the airplane was seen as just another communications tool for the Signal Corps, similar to a new radio or ground vehicle. At worst, it was perceived as a dangerous waste of precious resources, more likely to crash and kill its occupants than provide any military advantage. The idea of an airplane as a weapon was greeted with suspicion from the beginning.[17] The first head of the U.S. Army Signal Corps' Aeronautical Division, Brigadier General James Allen, believed an airplane flying at forty miles per hour could not possibly drop a bomb within

[16]Richard Tierney, *The Army Aviation Story* (Northport, AL: Colonial Press, 1963), 29.

[17]Carroll V. Glines Jr., *The Compact History of the United States Air Force* (New York: Hawthorn Books, 1963), 47-50.

half a mile of its target. It was not exactly an informed opinion, but for those who grew up walking or riding a horse or wagon, sustained movement over twenty miles an hour was nearly unimaginable. The Army had no airplanes, and as far as General Allen knew, no one had tried dropping bombs from one of the flying machines then in existence. In fact, for several years after its first successful test, some of the Army's staff officers doubted that there really was such a thing as an airplane. In the four years since man's first official flight, little was widely publicized or understood on the subject. The Army did have experience with balloons, however, and dirigibles seemed a better choice for aerial reconnaissance or even bombing.[18]

The year 1907, the same year Second Lieutenant Henry Arnold was beginning his Army career as an infantry officer, was an important year in the history of military aviation. That summer the Army's Signal Corps awarded a contract to build U.S. Dirigible Number One. The program was later abandoned in favor of the more promising technology of the airplane. In August, the Aeronautical Division in the office of the Chief Signal Officer was established. The United States became the first country to contract for a military airplane when the Signal Corps called for bids in December—four years after the Wright brothers' famous first flight at Kitty Hawk, North Carolina.[19] By February 1908, the Army had received forty-one bids for a military airplane but only three bidders met the requirements outlined in the specifications. The Army accepted all three bids. However, only the Wright brothers of Dayton, Ohio, who guaranteed a working airplane in two hundred days for $25,000, delivered the final product.

On 20 August 1908, the Wrights delivered their aircraft to Fort Meyer, Virginia and by 3 September, they had made their first test flight. On 17 September, after a series of tests and demonstration flights, test pilot Orville Wright invited First Lieutenant Thomas E. Selfridge, an

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[18]Richard H. Kohn, ed., *Makers of the United States Air Force* (Washington DC: US Government Printing Office, 1987), 1.

[19]Tierney, *The Army Aviation Story*, 28.

official Army observer of the trials, to ride as a passenger. On the fourth turn of the field, one of the propellers struck a brace wire attached to the rudder and the airplane fell 150 feet to the ground in a twisted wreck. Orville would survive but Selfridge died of his injuries a few hours later—the first of many officers who would lose their lives in the long struggle to develop an air force. Selfridge's death was a terrible blow to the Army. At the time, he was considered by many as the "most widely informed expert on dynamics of the air and mechanical flight."[20] This experience was unfortunately typical of the Army's interaction with aviation in its first few decades. In this context—a painfully slow acquisition process, a fatal crash, and a significant divide between expectations and actual aircraft performance—the rocky relationship between the Army, its airplanes, and its would-be aviation advocates began.

America's late entry into the First World War allowed the participating nations' air forces a significant head start in aviation development. In 1916, the Air Service was operating only twenty airplanes compared to Germany's five hundred. At the same time, France, Great Britain and Russia maintained a total of over seven hundred scouts, bombers and interceptor aircraft.[21] By 1917, Congress had passed appropriations for $640 million for expansion of airpower but in spite of the huge financial resources, time did not allow for the full industrial mobilization required to mass produce airplanes for the War Department before the armistice ended the war. Therefore, most of the aircraft flown by American crews in the war were borrowed French and British models. In spite of its first widespread use in combat, the airplane had little decisive effect on the war. This fact affected airpower development over the next two decades and bolstered the argument against significant investment in aviation as resources declined.[22]

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[20]Tierney, *The Army Aviation Story*, 32.

[21]Glines, *The Compact History of the United States Air Force*, 65.

[22]Ibid., 81.

Between 1918 and 1926, major powers throughout the world established independent air forces. For example, in 1918, Great Britain's Royal Flying Corps was combined with the Royal Naval Air Service to form the Royal Air Force. Similarly, thanks to the efforts of early airpower theorist Giulio Douhet, the Italian Air Force received its charter as an independent service in 1923.[23] Some believed separate air forces would provide independent thought and action that would eventually harness the full potential of the airplane. In the War Department, these developments presented a truly unique opportunity regarding aviation organization. The Army and Navy could have created a separate, independent air force by pooling all aviation resources from both branches into a separate and independent service, as the British and Italians did. This was the aim of leading early airpower enthusiasts although Billy Mitchell's court-martial would help to ensure this was not the course chosen. Alternatively, they could each embrace aviation and absorb it into their individual services as part of their core missions by integrating aviation at all levels. This was the more effective approach adopted by the Navy Department. Or instead, they could discard the independence of aviation and segregate it into a separate, special category within their own services. This would become the Army's approach during the interwar period with the creation of the Air Corps.[24] Although examining the ultimate objective of early airpower advocates is beyond the scope of this study, this study will assume that the goal of the Army airpower leadership throughout the period examined is the creation of a separate air force. Scrutinizing the ends desired by innovation leaders here is less important to the study than examining the ways they chose to approach innovation.

Aviators within the Army and Navy reacted to aviation technology in totally separate and

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[23]Tony Mason, *Air Power: A Centennial Appraisal* (London: Bookcraft Bath, 1994), 16-24.

[24]Jack M. Ivy, "The Paradoxical Paradigm: Aviation Leadership, 1918-1926: How William Moffett Changed the Navy and How Billy Mitchell Prevented the Formation of a Separate Air Force" (master's thesis, Maxwell Air Force Base, Alabama, 1997), 2.

distinct ways. The Navy, under the wise leadership of Admiral William Moffett, chose to embrace aviation. Over the next two decades, naval aviation came to dominate, even define, the Navy's maritime strategy. The Army, on the other hand, in spite of the radical approach by Billy Mitchell and his followers, took a more conservative approach. The friction between aviation advocates and the conservative senior Army leadership exacerbated an already tenuous situation created by decreasing resources and demobilization.[25]

In 1926, Congress approved the reorganization of the Air Service into an Air Corps but it would take two decades and another world war to eventually separate into an independent service. Under the Air Corps Act of 1926, the Air Corps was to be built up gradually, over the course of five years, to number eighteen hundred planes maintained by 1,650 officers and twenty-five hundred enlisted men. The Army did not complete the so-called Five Year Program owing to the resource constraints of the Great Depression.[26] However, there was more to it than resource constraints. Although the Army was beginning to entertain ideas of an expanded mission for airpower, the General Staff saw aviation primarily as an aid to the ground forces. The War Department's Field Service Regulation of 1923 stated, "success in war can be achieved only by all branches and arms of the service mutually helping and supporting one another in the common effort to attain the desired end."[27] Yet it outlined the missions of aviation units as combat, observation, and the transmission of information. By combat missions, it meant "the pursuit of hostile aircraft, the attack of hostile ground forces, and the bombardment of terrestrial objectives."[28] This mission set fell far short of visionary aviation enthusiasts like Billy Mitchell

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[25]Ivy, "The Paradoxical Paradigm," 2.

[26]DeWitt S. Copp, *A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power* (Garden City, NY: The Air Force Historical Foundation, 1980), 61.

[27]U.S.War Department, *Field Service Regulations United States Army1923* (Washington, DC: 1923), III.

[28]Ibid., 21.

who were beginning to develop the ideas of strategic bombardment by separate air forces. Some senior Army leaders would concede that the air arm might have an independent role in combat, separate from control from ground commanders, but only grudgingly. Given the constraints on resources and the continuing debate over the best use of airpower, the Army was not about to willingly relinquish command of a branch of its service. In this fight, its weapons, aside from political influence, were economic and doctrinal.[29]

In its first three decades, the Army reorganized its modern aviation capabilities often. The Army created the Aeronautical Division in 1907, originally under the control of the Signal Corps. In 1914, it became the Aviation Section of the Signal Corps. In 1918, the Bureau of Aircraft and Production and the Division of Military Aeronautics were established to manage aviation resources and doctrine and later that same year these offices merged to become the Air Service. Following the recommendations of the Morrow Board in 1926, Congress created the Air Corps and established an Assistant Secretary of War for Air.[30]

In 1934, General Headquarters (GHQ) Air Force was created to assume control over field aviation units and come directly under the Army General Staff. It existed as a peer to the Air Corps. However, due to overlapping responsibilities, GHQ Air Force was made responsible to the Chief of Air Corps directly. Army Air Forces (AAF) was created in 1941 headed by a chief who was also Deputy Chief of Staff for Air. The chief coordinated and directed the Air Corps, the Air Force Combat Command (formerly GHQ Air Force) and all other air elements. On 9 March 1942, the War Department created autonomous and co-equal commands within its framework: the Army Ground Forces, the Army Air Forces, and the Army Service Forces. The office of Chief of Air Corps and the Air Force Combat Command were dissolved. All elements of the air arm were

[29]Copp, *A Few Great Captains*, 61.

[30]Tierney, *The Army Aviation Story*, 37.

incorporated into the AAF under a single commanding general and a single air staff.[31] This is the leadership position ultimately filled by Hap Arnold who had become Chief of the Air Corps in 1938.[32] Because Congress created the Air Corps as a branch within the Army, it remained in existence as the chief component of the AAF until 1947 with the creation of the United States Air Force.[33]

Billy Mitchell, Revolutionary: The Wrong Approach to Innovation

Having briefly discussed the environment of early Army aviation, this section will survey the unsuccessful approach to innovation that set the context for Arnold's struggles—the approach of the controversial Colonel Billy Mitchell. Much of the culture of instability in Army aviation during this time can be traced to the divisive legacy created by Mitchell's revolutionary approach. His outspoken defiance of senior leaders in the Army and War Departments echoed throughout the culture and led to suspicion of Army aviation as an institution. Although he never served at the top post in Army aviation, his campaign for a separate air force has since brought him the contested title of "Father of the Air Force." The effect of his legendary court-martial was perceived by some as a tremendous example of self-sacrifice and personal courage—one to be emulated by any young air officer. To the contrary, Mitchell was insubordinate, often pompous, and overly outspoken—qualities not to be admired, although his peers and subordinates nonetheless revered him at the time.[34]

Born in 1879, Billy Mitchell was only six and a half years older than Hap Arnold. Although Mitchell was one of Arnold's early mentors, far from a role model, Billy served

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[31]Tierney, *The Army Aviation Story*, 38.

[32]Thomas Coffey, *Hap: The Story of the U.S. Air Force and the Man Who Built It, General Henry H. "Hap" Arnold* (New York: Viking Press, 1982), 185.

[33]Tierney, *The Army Aviation Story*, 38.

[34]Dik Alan Daso, *Hap Arnold and the Evolution of American Airpower* (Washington, DC: Smithsonian Institution Press, 2000), xv.

primarily as a bad example of leadership.[35] By the time Arnold began his career in 1907, Billy Mitchell had been in the Army for almost a decade having enlisted to fight in the Spanish American War. Thanks to family political connections he commissioned into the Signal Corps in 1901.[36] After learning to fly at his own expense in 1915 at the age of 36, Mitchell became a distinguished veteran of the First World War.[37] He was appointed Air Officer of the American Expeditionary Force as a lieutenant colonel in June 1917. In May 1918, he became Air Officer of the I Corps, a job that earned him a promotion to full colonel. In September of that year, he led the successful combined French-American bombing mission of nearly fifteen hundred aircraft against the Saint-Mihiel salient.[38] Mitchell was appointed Brigadier General in October 1918, and given command of the combined air services for the Meuse-Argonne offensive.[39]

His aggressive nature served him well and in 1919, Brigadier General Mitchell was appointed Assistant to the first Chief of the Army Air Service, Major General Charles C. Menoher. Since Menoher was a career infantryman and had no desire to fly, he delegated all aeronautical planning, education, and doctrinal development to Mitchell. Mitchell proved to be a visionary theorist who used his experience and his new position to continuously expand his views of aviation.[40] He believed airpower would eventually make armies and navies obsolete and that airpower in and of itself could be both independent and decisive.[41] Although Mitchell's ideas about airpower, including his concept of strategic bombardment and tactical air support, were

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[35]John W. Huston, *American Airpower Comes of Age: General Henry H. "Hap" Arnold's World War II Diaries Volume 1*, (Maxwell Air Force Base, AL: Air University Press, 2002), 5-15.

[36]Alfred F. Hurley, *Billy Mitchell: Crusader For Air Power* (Bloomington, IN: First Indiana University Press, 1975), 8.

[37]Isaac Don Levine, *Mitchell: Pioneer of Air Power* (New York: Stratford Press, 1943), 86.

[38]Cooke, *Billy Mitchell*, 87.

[39]Davis, *The Billy Mitchell Affair*, 40-46.

[40]Hurley, *Billy Mitchell*, 41-45.

[41]Copp, *A Few Great Captains*, 38.

clearly ahead of their time, he unfortunately allowed his passion to override good sense.[42]

As Mitchell formulated his ideas, he appointed himself the spokesperson for Army airpower innovation and took it upon himself to begin a campaign for a unified and separate air force independent of the Army General Staff. Frustrated by their unwillingness to support his vision for aviation or an independent service, Mitchell embarked upon a massive public campaign to effect change by using the media to bring the weight of public opinion upon the Congress. Mitchell's tenacity and knack for publicity quickly led to conflict with the Navy and War Departments.[43]

Mitchell claimed stridently and often that the eastern seaboard was wide open to air attack but that enemy battleships, the traditional threat, were no concern; airplanes would sink them far out to sea. According to Mitchell, the Air Service had replaced the Navy as America's first line of defense.[44] In 1921, after months of public embarrassment and private frustration, Menoher demanded Mitchell's dismissal for insubordination. Secretary of War, John Weeks, and the new Chief of Staff, General Pershing, rejected the demand, no doubt owing to Pershing's positive wartime experience with Mitchell. Although Mitchell had the support of senior leaders for a short time, his actions would quickly isolate his cause. Humiliated by Pershing's refusal to discipline Mitchell, Menoher resigned. Pershing brought in an old friend, Major General Mason Patrick—Mitchell's commander during the Meuse-Argonne offensive—whom he thought was the only officer in the Army capable of controlling Billy Mitchell.[45]

For the next four years, Patrick would attempt to regulate Mitchell's fervor, resorting often to sending him out of Washington on fact-finding expeditions to Europe and the Far East.

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[42]Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 7.

[43]Copp, *A Few Great Captains*, 37.

[44]Perret, *Winged Victory*, 8.

[45]Glines, *The Compact History of the United States Air Force*, 110.

Mitchell would use that time to expand his ideas and continue his public attacks by writing articles expounding his theories and demanding national awareness of the new dimension of warfare.[46] In March 1925, Mitchell's term as assistant chief of the Air Service ended. Warren G. Harding, a president notoriously tolerant of colorful characters, liked Mitchell. His successor, Calvin Coolidge, emphatically did not. When his time ran out, Mitchell was reduced to his permanent rank of colonel and sent to serve as Air Officer for the Army's Eight Corps Area at Fort Sam Houston, San Antonio, Texas. The assignment amounted to a permanent exile from the powerful main stream of aviation.[47] Undaunted, Mitchell continued his quest and used this opportunity to publish *Winged Defense*, a book capturing his airpower ideas. He also never missed an opportunity to stir up controversy in the press. In the August issue of *Liberty* magazine, he wrote an article titled "Exploding Disarmament Bunk: Why Have Treaties About Battleships When Airplanes Can Destroy Them?"[48]

Back in Washington, Patrick urged Congress to create an Air Corps. He said its relation to the Army would be "analogous to that which existed between the Navy and the Marines, combining a large measure of independence with an unbreakable bottom line bond."[49] By September 1925, Mitchell had been in exile for six months and in spite of his official air officer duties was continuing to share his ideas with the press at every opportunity. Therefore, it was no surprise that he would choose a tragedy to make headlines. When the local press asked him for comment on the crash of the Navy's most prominent aircraft, he carefully and deliberately constructed his statement so that it would make national headlines the next day. The statement

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[46]Glines, *The Compact History of the United States Air Force*, 111-115.

[47]Perret, *Winged Victory*, 11.

[48]Glines, *The Compact History of the United States Air Force*, 115.

[49]Perret, *Winged Victory*, 13.

would ultimately lead to court-martial.[50] If he was hoping his outburst would bring attention to his airpower cause, he got his wish, although not in a positive way. President Coolidge set up a committee, under Wall Street mogul Dwight Morrow to look into all aspects of aviation and get a report out in anticipation of Mitchell's trial. The president had had enough of Billy Mitchell and decided to pursue swift and decisive disciplinary action.[51]

On 28 October 1925, the War Department charged Colonel William "Billy" Mitchell with violation of the 96th Article of War on eight separate counts of conduct prejudicial to good order and discipline. The court-martial put an end to the most vocal phase of Mitchell's public dissent and his attempt to reform the nation's system of national defense in favor of his view of airpower.[52] Although the trial held the nation's attention throughout the fall and winter of 1925, it failed to generate sufficient public support to vindicate Mitchell's turbulent course of dissent. His criminal charges were based on Mitchell's scathing press release following the crash of the Navy's two million dollar dirigible, the *Shenandoah*, on 3 September 1925, which claimed the lives of fifteen crewmembers.[53] In his public statement, Colonel Mitchell claimed the incident was the latest in a series of aviation catastrophes resulting from the "incompetency, criminal negligence, and almost treasonable administration of the national defense by the Navy and War Departments."[54]

During the seven-week trial, the prosecution and defense called some of the most influential public figures, aviation enthusiasts, politicians, and military officers of their time, making it one of the most dramatic public spectacles of the decade. Among those coming to

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[50]Davis, *The Billy Mitchell Affair*, 209-218.

[51]Levine, *Mitchell*, 325.

[52]James J. Cooke, *Billy Mitchell* (Boulder, CO: Lynne Rienner Publishers, 2002), 4.

[53]A dirigible is any lighter-than-air craft that is both powered and steerable such as a blimp as opposed to free flying as a balloon, from the French verb *diriger* ("to steer").

[54]Grumelli, "Trial of Faith," 107.

Mitchell's defense were future senior leaders of the Air Service including Major Ira Eaker, Major Carl Spaatz and, the inspirational leader of the group of young aviators, Major Henry "Hap"Arnold.[55] Arnold, who was then in charge of information at the office of the Chief of the Air Service, had known Mitchell for over twelve years and had come to admire his vision and theories of airpower, although he was beginning to question Mitchell's controversial methods. Arnold leveraged his access to detailed Air Service statistics to support his mentor's case. He presented a significant list of data supporting Mitchell's charge that senior Army officers gave false information to Congress when they had the truth available. Arnold disclosed that 27 per cent of all the airplane crashes since 1919 were due to structural faults, not pilot error, implying neglect of maintenance and design by the War Department.[56] He contended that senior Navy and War Department officers and other witnesses who appeared before Congress and the Morrow Board had furnished misleading data and conclusions in order to minimize the perception of national vulnerability posed by air power. He also asserted most controversially that modern airpower had deprived America of its traditional advantage of being isolated by two oceans and that the current state of aviation readiness was in decline compared to European powers.

All Mitchell's defense witnesses said virtually the same thing: the Air Service was in a critical condition and it was the War Department's fault. The last witness was Mitchell's good friend, World War I flying Ace Eddie Rickenbacker. As a civilian, he was free to speak his mind and it was an opportunity he did not waste. He condemned the "military leaders, in the declining years of their lives" who were "so jealous of Mitchell they wanted to destroy him….It is a crime against posterity. This nation will pay the price of their selfishness."[57] However, in the end, even

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[55]Burke Davis, *The Billy Mitchell Affair* (Toronto, Canada: Random House, 1967), 251-255.

[56]Isaac Don Levine, *Mitchell: Pioneer of Air Power* (New York: Stratford Press, 1943), 351.

[57]Perret, *Winged Victory*, 13.

those who loved Billy, including Hap Arnold, acknowledged the verdict was just.[58]

On 17 December, the court recessed to decide the defendant's fate. Their deliberations lasted for exactly three hours. Colonel Billy Mitchell was found guilty on all eight specifications and suspended from rank, command and duty with forfeiture of all pay and allowances for five years—a punishment that would lead to Mitchell's resignation from the Army just two months later.[59]

President Calvin Coolidge remained particularly aloof during the unfolding drama but once the decision of the board of officers was final, he released his official statement on the matter. In it he wrote:

> The theory of government implies that every official, so long as he retains office, shall deport himself with respect toward his superiors. This is especially true of those in the military service. Unless this rule is applied there can be no discipline in the Army and Navy, without which those two forces would not only be without value as a means of defense, but would become actually a menace to society.[60]

Billy Mitchell was undoubtedly a man of great vision and tremendous faith, but the postwar path of dissent he chose clearly violated the obligations of a serving officer. He was contemptuous of authority, intolerant of opinions of others, possessed an exaggerated sense of purpose, and often completely wrong about objective facts. Mitchell's attempt at innovation, which sought to make an independent air force the centerpiece of a new federal department of aeronautics, was ultimately too radical to gain a consensus within the government or significant public support.[61]

The Morrow Board report was delivered to the president in November just three weeks before Mitchell's verdict. It concluded that, contrary to Mitchell's assertions, the United States

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[58]Arnold, *Global Mission*, 122.

[59]Cooke, *Billy Mitchell*, 221-225.

[60]Grumelli, "Trial of Faith," 277.

[61]Ibid., 294.

was not presently at risk from the airpower of other nations. Nor did the United States need an independent air force. It did however endorse many of the ideas presented by Mason Patrick. The report recommended the creation of a semi-autonomous Air Corps, a more ambitious procurement program and an assistant secretary of war for aviation.[62] At the same time, demonstrating that Mitchell's brand of publicity was coming to an end, only forty-five hundred copies of *Winged Defense* were sold between August, 1925 and January, 1926, the time span when the publicity of the court-martial was at its peak.[63]

Billy Mitchell polarized the aviation world into two camps—one that claimed air force dominance in warfare was inevitable and resistance to the fact was pointless, and one that saw the value of aviation but worked within the existing system to promote it. Those that followed Billy's example likewise wound up as martyrs for their cause. Those that understood the system and worked for the cause of aviation from within ultimately served the cause of airpower.

When measured against Starry's model of innovation, it is obvious that Mitchell's method was doomed from the beginning. Even though Mitchell understood his cause required a spokesperson and support from senior leaders, his radical methods isolated him from the mainstream and failed to gain any consensus among aviation supporters. Mitchell's insubordinate approach separated him from the support of the senior leaders, so important for the continuation of his cause. By inciting a court-martial conviction, it also eliminated continuity of leadership by any of his peers or subordinates who might pick up and continue the crusade. After the trial, senior Army leaders shunned anyone associated closely with Mitchell and some, like Arnold, were punished for their actions in support of Mitchell's cause.

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[62]Grumelli, "Trial of Faith," 294.

[63]Hurley, *Billy Mitchell*, 108.

William Moffett, Evolutionary: A Better Approach to Innovation

While the controversial and flamboyant Billy Mitchell exemplified early believers in Army airpower, naval aviation enthusiasts followed the wise direction of a seasoned, 35-year Navy veteran, Admiral William Moffett who served as Chief of the Navy Bureau of Aeronautics from 1921 until his death in 1933.[64] Being one of the first naval officers to use aviation in a fleet-scouting role, Moffett was excited about aviation's possibilities and even considered himself an airpower enthusiast. However, he looked at airpower realistically and believed that claims for it that could not be substantiated would do it more harm than good. Moffett was intimately familiar with both air and sea operations and he completely understood the men of naval surface and aerial warfare.[65] Moffett's appointment as Bureau Chief was key not only to the way naval aviation was accepted within the Navy, but also in the way the entire Navy developed over the course of the next two decades. Moffett saw aviation as an integral, organic part of the naval fleet. To him, aviation was of value only as far as airplanes contributed to the overall effectiveness of the Navy, its ships and its sailors. Moffett saw the tactical, strategic, and political implications of naval aviation and dedicated his career toward bringing aviation into the fleet as an integral part of the Navy.[66]

To Mitchell, the airplane brought an entirely new dimension to warfare. Mitchell believed aviation alone could fight and win wars between nations and peoples and that the long-range bomber had such enormous destructive capacity that neither navies nor armies could resist it. To realize the full potential of airpower Mitchell believed the United States had to immediately

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[64]Tate, *The Army and Its Air Corps*, 47. Ironically, Moffett was killed in the crash of the Navy dirigible Akron during a storm off the coast of New Jersey on 3 April, 1933, Trimble, *Admiral William A. Moffett*, 264-270.

[65]William E Trimble, *Admiral William A. Moffett Architect of Naval Aviation* (Annapolis, MD: Naval Institute Press, 1994), 141-149.

[66]Ibid., 4-7.

establish an independent air force supplied with the most modern equipment, flown by trained air personnel, and led by officers who were unencumbered by ties to either the Army or the Navy.[67] Mitchell clearly took his views from the British approach while Moffett followed a more conservative path.

Mitchell's views were antagonistic to Moffett's ideas of fleet support and integration of aviation. Mitchell thrived on controversy and often drew heavy criticism for his methods. Moffett knew that to neutralize Mitchell, all he had to do was wait until Mitchell's intemperance led to his own undoing. Moffett often referred to disloyalty during the height of the Mitchell controversy during the twenties, but he rarely mentioned Mitchell's name in public. He did not have to. Moffett won the conflict using an astute combination of carefully worded jabs in the news media and the support of fiscally conservative Republican administrations that did not want to add another military service to the already existing layers of Washington bureaucracy.[68]

Moffett had taken on what could be termed an evolutionary vision for the Navy, which, when compared to the simplistic Mitchell vision, was truly remarkable. Moffett's vision for aviation led the Navy down the path to total air and sea integration. Integration led to an "air minded" Navy officer corps and to the eventual development and deployment of successful carrier forces in the Pacific during World War II. Moffett developed a "line officer mentality" among the officers that were in aviation. This approach was completely different from the "elitist mentality" that Mitchell's aviators developed.[69]

Mitchell's propaganda gave the impression that aviation was neglected during the twenties. Nothing could be farther from the truth. Officials in Washington and both military services devoted an enormous amount of time and effort to aviation. During that decade there

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[67]Trimble, *Admiral William A. Moffett*, 8-10.

[68]Ibid.

[69]Ivy, "The Paradoxical Paradigm," 39.

were at least fifteen major investigations including the Baker Board, the Morrow Board, the Rogers Subcommittee, the Menoher Board, the Federal Aviation Commission and numerous Navy General Board hearings dealing with civil and military aviation. The probes grappled with the problems presented in defining the federal regulatory role, keeping the aviation industry reasonably competitive and profitable, developing aviation as an offensive striking force, and determining the quantity and quality of military airplanes within coordinated, long-range procurement programs.[70] Aviation was a major budgetary item for the Navy as well as the Army throughout the twenties and thirties, consuming ever-larger portions of appropriations each year. There may have been indecision, misdirection, opposition, and controversy, as should be expected during such a dynamic period, but aviation was certainly not neglected.[71]

The Mitchell-Moffett drama played itself out on all levels, but the most decisive battles took place in the field of public relations. The twenties saw the emergence of the modern mass media including radio, wire services, and motion pictures with sound. Traditionally the Navy avoided publicity but Moffett saw great opportunities to promote naval aviation through carefully managed public relations. Under his influence, the modern mass media became a powerful instrument for change in naval aviation. Mitchell also recognized and exploited the power of publicity but he failed to see beyond its immediate dramatic effect and, unlike Moffett, never understood its subtleties.[72]

Naval aviation of the twenties was a delicate balance between the desires of the aviators, their visions of airpower, and the traditionalist views of the Navy Department. Moffett was very successful at striking the balance, keeping conflicts in check to produce a mutually acceptable view of the future of naval aviation. As an integral part of the Navy force, naval aviators

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[70]Trimble, *Admiral William A. Moffett*, 11-13.

[71]Ibid., 9.

[72]Ibid., 10.

influenced many innovative applications of airpower including the development of carrier warfare. A school of carrier and aviation-oriented officers had emerged in the Navy during the First World War and managed to sustain themselves against the extreme pressures of both the battleship admirals within the Navy and the extreme airpower enthusiasts like Billy Mitchell.[73] This success was directly attributable to William Moffett's leadership approach to innovation.

While the British suffered from having divided the responsibility for naval aviation between two services, the Royal Navy and the Royal Air Force, the American Navy had created a more effective organization, the Navy Bureau of Aeronautics under Moffett that was a strong bureaucratic machine to protect the interests of naval flyers.[74] The American Navy benefited from an aeronautical administrative system that allowed enthusiastic innovators a high degree of autonomy. This proved effective in keeping the innovators on board, provided decision makers with a wide range of options to choose from and allowed the theorists room for independent reflection on future doctrine.[75] Had carrier ships come entirely under the command of a united air force, as Mitchell advocated, or had just carrier aviation come under a united air force, as was the case in the United Kingdom, the result probably would have been less efficient and less effective. As it was, the U.S. Navy and its embedded aviators developed its carrier fleet into the formidable force that eventually proved so decisive in the Pacific Theater of World War II.[76]

Again, applying Starry's model, this analysis clearly demonstrates that Moffett's approach to innovation got it right. Recognizing the potential of airpower, Moffett saw the need for change and developed a vision to implement that change. He became a subtle spokesperson

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[73]Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (New York: Macmillan Publishing, 1973), 249.

[74]Allan R. Millett and Williamson Murray, *Military Innovation in the Interwar Period* (New York: Cambridge, 1996), 336.

[75]Ibid., 365.

[76]Ivy, "The Paradoxical Paradigm," 31.

for his cause while allowing Mitchell to serve as lightning rod for controversy. His even keeled approach allowed for long-term continuity in the leadership of innovation of Navy airpower that would continue even after his premature death. Exemplifying Kotter's rules for vision and communication and Covey's rules for trust, Moffett garnered continuous support from senior Navy leaders and peers as well as the respect of civilian political leaders.

The examples of Mitchell and Moffett illustrate the fact that innovation requires much more than just vision. Effective innovation requires strategic minded leadership and carefully nurtured relationships. The fact that personal relationships among commanders are important and have an impact on military affairs in both peace and war is not new. Although the armed forces spend a great deal of time and energy designing organizational relationships and arrangements that will ensure success, harmonious relationships among commanders and other senior leaders often provide the necessary lubrication for making the military machine run smoothly. In the face of less than optimum circumstances, good working relations can make a military operation effective. Conversely, even the best-designed organization cannot overcome problems created by unnecessary personal friction.[77]

ARNOLD'S EXPERIENCE 1907-1929

Arnold the Revolutionary

The study now turns to the focus of this paper, the assessment of Hap Arnold's approach to innovation. This section will examine how Arnold evolved from a revolutionary protégé under the influence of Billy Mitchell to the seasoned, mature leader required to champion the cause of airpower innovation into the Second World War.

Henry Harley "Hap" Arnold was born in Gladwyne, Pennsylvania, on 25 June 1886. He

[77]Thomas E. Griffith Jr., USAF, "Command Relations at the Operational Level of War: Kenney, MacArthur, and Arnold," *Air and Space Power Journal*, [Summer 1999], Maxwell, Air Force Base, AL, 51.

was the second son of five children born to Dr. Herbert Arnold, a strict Mennonite surgeon and a veteran of the Spanish-American War. Arnold's father was a stern man with a strong work ethic, and a low tolerance for horseplay—which is probably what spurned Henry's mischievous streak.[78] He wanted his oldest son, Thomas, to attend the U.S. Military Academy at West Point but Thomas refused, leaving young Henry to represent the family. Even though his mother wanted him to attend divinity school, Henry took the Academy entrance exam and placed second in his congressional district.[79] Fortunately, for the Arnolds, the first place applicant was disqualified. In 1903 at the age of seventeen, Henry left home and started his plebe year at West Point as a member of the class of 1907.[80]

Arnold was an unexceptional student, graduating 66 of 111 cadets, but he did excel outside the classroom. He played football and developed a passion for polo, which coincided with his larger goal of serving in the Cavalry branch after graduation. According to Arnold, the Cavalry was his only reason for attending West Point in that it was "the last romantic thing left on the earth."[81] He also found time to pursue his penchant for agitation. He helped found the revolutionary, (at least in the context of West Point) "Black Hand," an organization whose primary mission was staging and executing pranks on Academy grounds.[82] The spirit which Henry imparted in leading the West Point pranksters and in openly defying normally unquestioned authority motivated other cadets, and perhaps even some officers, while setting the tone for his future Army career.[83]

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[78]H. H. Arnold, *Global Mission*, (New York: Harper and Brothers, 1949), 5.

[79]James H. Willbanks, *Generals of the Army: Marshall, MacArthur, Eisenhower, Arnold, Bradley* (Lexington, KY: University Press, 2013), 147.

[80]Coffey, *HAP*, 16.

[81]Arnold, *Global Mission*, 7.

[82]Willbanks, *Generals of the Army*, 148.

[83]Daso, *Hap Arnold and the Evolution of American Airpower*, 22-30.

Arnold's class standing did not earn him a position in the Cavalry. Instead, in spite of personal protest and attempts by his father to have his assignment changed, Arnold commissioned into the Infantry in 1907. As a penance, he was allowed to pick his first duty station and eagerly chose the Philippines.[84] In his two years in the Philippines Arnold volunteered to serve most of his time with a detail mapping the islands of Luzon and Corregidor under Captain Arthur S. Cowan of the Signal Corps.[85] In 1909, Arnold's unit rotated back to the United States, assigned to Governors Island, New York. Having saved up some money during his time in the jungle, Arnold decided to take the circuitous way home by sailing to New York by way of Hong Kong, Singapore, Egypt and a tour of Europe. It was in Europe where he saw his first airplane in flight when he witnessed Louis Bleriot's flight over Paris in July of that year.[86]

After serving for two years on Governors Island, Arnold applied for transfer to the Ordinance Corps. However, in March 1911 Congress appropriated $25,000 for military aviation including training for two pilots. Captain Cowan, now posted to Washington had the task of selecting the two officers. Remembering Arnold's tireless efforts on his mapping detail in the Philippines, Cowan offered him the job. Arnold addressed the idea of flight training with his commanding officer. The commander's response was a terse, "Young man, I know of no better way for a person to commit suicide!"[87] It was a challenge he could not refuse, as well as an opportunity to leave the Infantry. Arnold reported to the Wright Company in Dayton, Ohio, in April of 1911, and began flight training immediately.[88]

Arnold was disappointed not to receive flight training from the Wrights directly, but he

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[84]Arnold, *Global Mission*, 9.

[85]Willbanks, *Generals of the Army*, 149.

[86]Arnold, *Global Mission*, 12.

[87]Ibid., 15.

[88]Willbanks, *Generals of the Army*, 150.

did begin a close personal friendship with the family that would last a lifetime. The Wrights would at least teach ground school and since there were no flights on Sunday or during bad weather, Arnold often joined them for family dinners and conversation. After logging only three hours and forty-eight minutes, Arnold made his first solo flight. By 10 June training was complete with a meager total of six hours and twenty-six minutes of flight logged.[89] After an unceremonious graduation, which involved simply crating up the Army's newest Wright flyer, Arnold and fellow student Lieutenant Thomas Milling reported to College Park, Maryland to set up the Signal Corps' flight school. Starting from scratch, the two aviators set about writing manuals and standardizing procedures and nomenclature for both flight and maintenance operations. The newly graduated aviators became flight instructors themselves and trained their new commanding officer, Captain Charles Chandler, and his adjutant, Lieutenant Roy Kirtland.[90]

At that time flying was still a novelty and any flight of significance aroused great publicity, especially if there was any advance notice. Hap Arnold set an altitude record for military planes on 7 July when he reached 3,260 feet on a local flight from College Park. He beat his own record on the eighteenth when he ascended to 4,167 feet.[91] That October Arnold won the very first Mackay Trophy, an award given annually for the most meritorious military flight of the year, when he used his aircraft to locate an enemy cavalry troop during a field reconnaissance test.[92] From these experiences, Arnold began to discover the value of public opinion in support of aviation and found he had some talent in the area of public relations. His early flying is also where he began to form his vision for the future of airpower, but in November at Fort Riley, Kansas, Arnold experienced a brush with death that would temporarily cloud that vision. While

[89]Daso, *Hap Arnold and the Evolution of American Airpower*, 46-48.

[90]Ibid., 49.

[91]Benjamin D. Foulois, *From The Wright Brothers To The Astronauts* (New York: McGraw-Hill, 1968), 95.

[92]Daso, *Hap Arnold and the Evolution of American Airpower*, 57.

piloting a Wright Model C aircraft at 300 feet, the craft stalled and entered a flat spin. Arnold recovered the aircraft just above the ground but after landing he was so shaken that he decided he was finished with flying—at least for a while.[93]

Early aviation was considered very risky so tours of duty were generally very short.[94] Therefore, it was considered routine when Arnold requested a leave of absence from flying duties after less than two years. He transferred to Washington where he worked as the aide to the chief of the Army Signal Corps. Working in the capital helped him not only to gain insight into the workings of the federal government but also to meet the major aviation industrialists of the age. He maintained his friendship with the Wright brothers and came to know Glenn Curtiss, Elmer Sperry, Henry Ford, Donald Douglas, and other aviation innovators.[95] His personal relationship with major actors in the U.S. aviation industry would become a key component in Arnold's contribution to the growth of American airpower across two world wars.[96]

This was also when Arnold first met the eager young Signal Corps officer, Captain Billy Mitchell. At thirty-two, Mitchell was the youngest officer ever appointed to the General Staff. Not yet a flyer, Mitchell came to Arnold's office to research a paper on the future application of military airpower that he was presenting to the Army War College. Arnold and Mitchell hit it off immediately and would remain friends until Mitchell's death in 1936.[97] Although rarely assigned together, Arnold and Mitchell would continue corresponding regularly. Over the years, Arnold became a student of Mitchell's vision of airpower while emulating some of Mitchell's flamboyant methods. However, he began scrutinizing Mitchell's controversial approaches as he recognized

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[93]Willbanks, *Generals of the Army*, 151-153.

[94]Tierney, *The Army Aviation Story*, 36.

[95]Daso, *Hap Arnold and the Evolution of American Airpower*, 111.

[96]Ibid., 73.

[97]Arnold, *Global Mission*, 37-38.

their true long-term costs.

Following his tour in Washington, Arnold again posted to the Philippines where he reported in January 1914.[98] Though he had little to do with aviation, this posting had Arnold living next door to young Lieutenant George C. Marshall. In dealing with Marshall during this period, Arnold gained an appreciation for the future Chief of Staff's skills and abilities. The two maintained a cordial and respectful relationship that would become very important during later life as they both rose in rank.[99] Upon completion of his Philippines tour, Arnold posted to Rockwell Field, San Diego as the post supply officer. The job returned him to flight status and brought a promotion to captain. His duties did not require much flying but by November of 1916, he had requalified as an aviator. During this tour, Arnold had his first of many conflicts with a superior officer. When two fellow aviators went missing, Arnold, without asking, immediately took an aircraft to conduct a search for them. Although the commander was later reprimanded for his inaction, Arnold's efficiency report reflected that he had conducted an unauthorized flight. The report criticized his abilities and otherwise generally condemned his overall performance.[100] Because of that experience, it has been alleged that Arnold suffered his first exile to an obscure assignment. However, at the time of the incident, he was already on orders. Although it is interesting that after having such a bad experience with his commander he would be sent to Panama to command an air squadron with no airplanes, Arnold later referred to his assignment to Panama as coincidental and not punishment.[101]

Apparently, the bad efficiency report had no long-term effect. After his short tour in the Canal Zone, he returned to duty in Washington, assigned to the Signal Corps Aviation Section.

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[98]Willbanks, *Generals of the Army*, 153.

[99]Coffey, *HAP*, 80.

[100]Willbanks, *Generals of the Army*, 153-155.

[101]Arnold, *Global Mission*, 46-47.

Despite his requests for a posting to Europe during the war, he remained in Washington to plan and organize the development of America's wartime air fleet.[102] This experience would prove vital to his development as an innovation leader. Here Arnold would continue to refine his vision for airpower innovation as he developed long-term relationships with senior military and civilian leaders in Washington. Wartime brought rapid expansion and those already in the Aviation Section represented the Army's total corporate knowledge for air matters. Arnold was promoted into the position of Executive officer of the Air Division in 1917, making him the youngest colonel in the Army, albeit a temporary wartime rank.[103] Based on his experience as a flyer, his years interacting with the Wrights, and his relationships developed with industry leaders, Arnold's primary focus during this period became assisting the mobilization of the war machine including training facilities, planes, and trainees. This experience only reinforced previous efforts to improve American technology, efforts that Arnold had already seen during his previous Washington tour of duty in 1913. It was an experience he internalized and would leverage effectively during the next war as well.[104]

After the war, Arnold reverted to his permanent rank of captain but was soon promoted to major based on his exceptional performance. He was posted again to Rockwell Field in California where he spent time building a close working relationship with fellow aviation pioneers, Jimmy Doolittle, Ira Eaker, and Carl Spaatz. Although his fellow airpower pioneers had a significant impact on his vision, Billy Mitchell contributed most to Arnold's understanding of national politics in both positive and negative ways. Mitchell's zealous, insubordinate approach to creating an independent air force taught Arnold how not to tackle political problems. He later recalled that Mitchell himself had warned him away from outspoken methods that he had been using to draw

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[102]Willbanks, *Generals of the Army*, 154.

[103]Ibid., 86.

[104]Daso, *Hap Arnold and the Evolution of American Airpower*, 87.

attention to airpower. Mitchell believed that, as a son of a U.S. senator from Wisconsin and well off financially, he was able to survive expulsion from the Army, while most of his followers had no such means.[105]

In August 1924, Arnold was surprised by orders transferring him to Washington as a student at the Army Industrial College. Arnold never did find out who arranged it, but he thought it could have been Mitchell who was still serving as assistant to the Chief of the Air Service.[106] More likely, Patrick saw the potential of linking Arnold's civilian aviation industry associations with Army mobilization doctrine. Arnold started class as one of two Air Service officers in a class of thirteen. During the six-month course, students worked in small groups on several industrial production cases. World War I experiences with aircraft production had disappointed Arnold, and now he knew why. During the war, American industry failed to mobilize fast enough to deliver the massive number of aircraft required for the war effort. At the time, there was no aircraft production industrial base to mobilize. Instead, automobile production facilities had to be retooled to meet production requirements, a process that took time. Years later, Army planners still insisted upon the American auto industry as the primary contractor to manufacture airplanes in times of crisis. Arnold lobbied for a different approach, arguing that the now expanding aircraft industry should remain the primary contractor while the auto industry should be utilized for small parts production and other subcontracting jobs. His approach would leverage the auto industry's ability to mass-produce in large quantity while exploiting the aeronautical industry's talents in innovation and design. This short college assignment was one of the most valuable of Arnold's

[105]Daso, *Hap Arnold and the Evolution of American Airpower*, 105.

[106]Coffey, *HAP*, 114.

career, one that he said "was to stand me in good stead in later years" as he applied innovation to industrial mobilization in the next war.[107]

After graduating from the Industrial College in February 1925, the same month Billy Mitchell was exiled to San Antonio, Arnold went to work in the Air Service as Patrick's chief of information. This was encouraging timing for Arnold, as it put him in the center of the interwar arguments regarding the roles and missions of the various military services, and especially the debate over battleships versus aircraft.[108] In this function, he was well acquainted with new developments in foreign and domestic aviation, in both the civilian and the military arenas. Arnold became acutely aware that the advancement of aviation required press coverage, which could foster public support and with it, funding from Congress. Additionally the eventual creation of a separate air force as Mitchell envisioned, required public support. Therefore, during this time he became instrumental in publicizing the accomplishments and capabilities of the Air Service. One way he chose to publicize his cause was through writing. Arnold wrote "The Performance of Future Airplanes" for the July 1925 issue of *U.S. Air Service* magazine. In this article, he explained that long-term predictions of aircraft performance were difficult, but in the near term—four or five years—there existed a "fair enough basis on which to estimate something about how fast, how far, and how high airplanes of various types may be expected to go."[109] Meanwhile, he had very little success in getting Billy Mitchell to temper his language and writings while campaigning for an independent air force.

The outcome of the Mitchell's trial was a foregone conclusion. Despite the efforts of Mitchell and his supporters to make airpower the issue, thirteen generals, including Douglas MacArthur, judged him only on his evident insubordination, and on that issue he was clearly

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[107]Daso, *Hap Arnold and the Evolution of American Airpower*, 110-111.

[108]Willbanks, *Generals of the Army*, 155.

[109]Daso, *Hap Arnold and the Evolution of American Airpower*, 111.

guilty.[110] "Billy had it coming," Arnold later admitted, "but at the time we didn't think these things out. As the testimony of any of us who were called to the trial shows, the whole Air Service was angry."[111] However, Arnold's connection with the drama was not finished. He, along with Major Herbert Dargue, continued the fight by surreptitiously forwarding information to certain congressional representatives, hoping they would support a restructuring of the current organization. They also sent letters to Air Service reservists urging them to lobby their congressmen to support legislation for a stronger air organization that would have greater independence.[112] When Patrick found out about Arnolds insurgency, he decided to put an end to it once and for all. He offered Arnold a choice between a court-martial and resignation from the service and undoubtedly expected Arnold to choose the latter. However, Arnold subscribed staunchly to the dictum that a man must never abandon a fortress under siege, and he perceived the Air Service as dramatically besieged. He could not have imagined, however, that Patrick would exile him to Fort Riley, the scene of his near crash in 1912, which was the most traumatic experience of his military career.[113]

Arnold's Experience and Relationships

Arnold's exile to Fort Riley was not the defeat Patrick had hoped. In fact, it was the turning point in his life where he re-created himself as an officer. While serving at Riley Arnold made the fateful decision to stay in the Army and champion the cause of aviation innovation in a more productive way. By June 1927, Arnold would reach his twentieth year of military service.

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[110]Copp, *A Few Great Captains*, 47. Of the twelve Army officers weighing the evidence in Mitchell's court-martial, Major General Douglas MacArthur had known the defendant since boyhood. The two families were close neighbors, the relationship spanning three generations, Mitchell's Scottish-born grandfather and Judge Arthur MacArthur enjoyed an association of half a century; Billy's sister Janet had been Doug MacArthur's first love.

[111]Arnold, *Global Mission*, 122.

[112]Huston, *American Airpower Comes of Age*, 21.

[113]Coffey, *HAP*, 126.

Before he had even left Washington, John K. Montgomery, a captain in the Air Reserve and president of American International Airways (a branch of Pan Am) offered Arnold a lucrative position as the first president of Pan American World Airlines, including significant stock options and an impressive salary.[114] Arnold clearly understood that his eviction from Washington was intended to be permanent. The arguments in favor of retirement were extremely sound. Opportunity in the form of heading a new airline had great appeal and after twenty years of service Arnold seemed to have little chance of promotion and even less chance of ever becoming a general officer. He had four children to raise and educate and the only guarantees left in the Army were a retirement pension.[115] Given the circumstances, it seemed logical that Arnold would finish his remaining time and retire with a full pension and a promising future in the Airline industry. However, Arnold decided to continue the fight, no matter what the future held. Years later he would recall the logic simply; "I couldn't very well quit the service under fire."[116] Besides, Army airpower needed an advocate, one with Arnold's specific skill set.

The Arnold family arrived at the Fort Riley railway station on a cold and sleeting February afternoon expecting a reception to match the weather, especially since the commanding officer there was General Ewing E. Booth, "a stern old Cavalryman" who had been one of the judges on Mitchell's court-martial. However, when Arnold arrived to report in to the commanding general at his quarters, he was surprised at the welcome. Ewing proclaimed in a voice loud enough for everyone to hear, "I'm proud to have you in this command. I know why you are here, my boy, and as long as you are here, you can write and say any damned thing you want. All I ask is that you let me see it first."[117] This environment provided the space Arnold

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[114]Daso, *Hap Arnold and the Evolution of American Airpower*, 118.

[115]Copp, *A Few Good Captains*, 59.

[116]Coffey, *HAP*, 126.

[117]Ibid., 128.

needed to turn around.

Arnold assumed command of the 16th Observation Squadron and was warmly welcomed by Booth and the other officers at the post. The squadron initially had only a few obsolete aircraft but Arnold made the most of his assets and provided reconnaissance services to units throughout the Midwest. Despite his exiled status he still served as an advocate for aviation by instructing officers attending the Cavalry School on the use of the airplane in support of ground maneuvers.[118] Soon Arnold began experimenting with new tactical procedures with his aviators, seeking new ways for planes to help ground troops. He examined ideas such as air to ground communications, how cavalry could best cope with enemy air attacks, and how fast horsemen would have to get off roads and seek cover when enemy strafers were approaching. Arnold even codified his techniques and had them incorporated into the school's curriculum with Booth's endorsement. General Booth was so pleased that at the end of the year he wrote an extraordinary commendation for the Air Service major who had come to him the previous February in disgrace:

> He is a hard worker, enthusiastic, and his judgment is sound. His recommendations are generally exceptionally worthy of consideration. The progress in training between the Air Corps and the other combat units of this post has been of exceptional value and is improving all the time…. I cannot conceive of a more desirable condition existing than does exist here between Major Arnold and his unit and the other units on this post. I shall be very sorry to see Major Arnold leave the post but feel that his excellent service here entitles him to as favorable a recommendation as I can give him.[119]

In the spring of 1927, Arnold was called upon to support President Coolidge's vacation in the Black Hills of South Dakota. The president wanted his mail flown in by the Army Air Service so that it would be on his desk every Tuesday and Thursday morning. Since South Dakota was in the Seventh Corps Area, the responsibility fell on Arnold. Knowing the unpredictable nature of Midwestern weather and its effect on flying conditions, Arnold had half of the daily mail held

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[118]Willbanks, *Generals of the Army*, 157.

[119]Coffey, *HAP*, 129.

back by the ground crews so that there would always be something to deliver to the president on Tuesdays and Thursdays, whether his men were allowed to fly or not. Some of the mail may have been late, but there was at least an uninterrupted flow.[120] Seamlessly accomplishing the mission, Arnold earned a letter of commendation from the Secretary of War and gained the favorable attention of General James E. Fechet who was replacing General Patrick as Air Service chief. This action, combined with his excellent performance with the Cavalry School, would eventually lead to the end of his exile and the beginning of his return to the main stream of airpower.[121]

After deciding to stay in the Army, Arnold had applied for admission to the CGSS at Fort Leavenworth, Kansas, which could open the road to higher Army rank. This was a significant move on Arnold's part. It demonstrated not only his resolve to continue in service but that he intended to meet the requirements for higher rank and command in order to continue shepherding innovation up to the highest levels possible. While General Patrick was Air Service chief, there was no chance that an application would be forwarded favorably. Even if it were to reach the commandant at Leavenworth, Major General Edward L. King, it would not be received well. King was also one of the judges at the Billy Mitchell trial. He disapproved not only of the Arnold's part in Mitchell's airpower campaign, but also of Hap Arnold personally. However, based on General Booth's recommendation General Fechet decided, with concurrence from Chief of Staff Summerall and Assistant Secretary of War, F. Trubee Davison, that Arnold would attend CGSS. General Summerall had sent a wire to the Commandant at Fort Leavenworth asking whether an additional officer could be taken care of. The reply came back, "Yes, who is he?" Arnold's name was submitted. A second reply stated that Arnold would naturally be accepted if sent. However, in a private letter to General Fechet, King wrote that if Arnold came to

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[120]Willbanks, *Generals of the Army*, 157.

[121]Coffey, *HAP*, 133-134.

Leavenworth as a student he would be "crucified" by the experience.[122] In spite of the lack of cordiality in the general's letter, Arnold would attend and excel as a CGSS student.

Arnold and CGSS: Evolution of the Leader

Fort Leavenworth's role as a center of learning for the United States Army dates back to 7 May 1881 when William T. Sherman ordered the establishment of a School of Application for Infantry and Cavalry at Fort Leavenworth, Kansas. Sherman had been a college president and recognized the value of advanced professional education for U.S. Army officers.[123] After several years of false starts, the school opened permanently in 1902 to qualify graduates for positions on the soon to be established War Department General Staff. Unfortunately, the War Department did not immediately select Leavenworth graduates for staff appointments and the potential of Leavenworth and its graduates went largely unrecognized until the First World War.[124] When the United States entered the war in 1917, General John J. Pershing recognized that the Leavenworth education left a mark of professional excellence upon its students and by war's end, course graduates dominated staffs throughout the American Expeditionary Forces.[125]

In spite of parochial and resource constraints, the Fort Leavenworth school's most notable characteristic during the interwar years was its ability to reorganize to meet the Army's changing needs. The first such reorganization came in 1923 after the War Department convened a board of officers to study the Army school system. Owing to a need to eliminate a "hump" of fifty-eight hundred officers commissioned between 1916 and 1918,[126] of whom nearly a thousand

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[122]Coffey, *HAP*, 133-134.

[123]Roger J. Spiller, *A Brief History of the US Army Command and General Staff College 1881-1981* (Fort Leavenworth KS: Combat Studies Institute, 1981), 5.

[124]Ibid., 15.

[125]Spiller, *A Brief History of the US Army Command and General Staff College 1881-1981*, 5.

[126] Peter J. Schifferle, *America's School For War: Fort Leavenworth, Officer Education, and Victory In World War II* (Lawrence, KS: University Press of Kansas, 2010), 22.

were recommended for advanced schooling, the board suggested that the course of instruction be shortened to one year and the name be changed to the Command and General Staff School.[127].

Most professional army officers came out of World War I convinced that they needed to do a better job of preparing for a possible future conflict on the same scale and that peacetime education was the key to such preparation. As the size and budget of the U.S. Army dwindled during the next two decades, maintaining large units proved increasingly impractical. Leaders had few opportunities to maneuver troops and thus the only way to prepare for the future was to invest in the intellectual development of the officer corps. Attending branch courses, and especially CGSS, became a key component of a successful career.[128]

CGSS became a very competitive environment. Graduates were ranked strictly according to their class averages, rankings that were often important factors in determining the students' future assignments and promotions. Class standing determined the students' subsequent standing on the list of officers eligible for positions in higher-level staffs. CGSS was rarely an easy assignment but the majority of students considered the school a positive experience, and for many of them, the experience proved to be the single most important developmental experience of their careers.[129]

For all its shortcomings, the interwar CGSS provided the essential concepts and staff procedures that held the U.S. Army and the Air Service together during the pre-war expansion that began in 1940. Even more than in the previous world conflict, CGSS was an essential component to victory. The school played a key role in the education of many of the senior leaders

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[127]Spiller, *A Brief History of the US Army Command and General Staff College 1881-1981*, 17-21.

[128]Willbanks, *Generals of the Army*, 11.

[129]Ibid., 15.

who would lead the nation to victory including Generals George C. Marshall, Douglas MacArthur, Dwight Eisenhower, and Omar Bradley.[130]

Advocates of airpower and mechanized warfare complained that these aspects received less emphasis than conventional Infantry-Artillery operations. To some extent, the neglect of aviation was inevitable as the Army began to emphasize the doctrine of strategic bombing which reduced the number of air units available to support ground operations. However, in the course of the 1930s the school did incorporate increasingly sophisticated problems involving observation, ground attack, and pursuit fighters as well as entire mechanized divisions, at a time when the U.S. Army had few aircraft and even fewer tanks.[131]

Creation of the Air Service in 1920 brought the establishment of an officer's graduate school patterned after Leavenworth's program. Organized by Major Thomas Milling, Arnold's good friend from flight training, the Field Officers School (FOS) was located at Langley, Virginia.[132] In 1922, FOS became the Air Service Tactical School (ASTS) and ultimately moved to Maxwell Field, Alabama in 1931. Completion of ASTS would likely lead to recommendation to attend the CGSS at Fort Leavenworth, which had become a virtual prerequisite for higher command. In a demonstration of the Army's endorsement of the importance of the air arm, as many as fifteen percent of each Leavenworth class consisted of Air Service officers.[133]

However, many pilots resented the time away from the flight line. Arnold's good friend Carl Spaatz, who attended CGSS in 1935, was disgruntled even before he arrived in Leavenworth. He told Arnold to make no mistake, "I am going primarily because I have been

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[130]Willbanks, *Generals of the Army*, 16-17.

[131]Ibid., 14.

[132]Robert T. Finney, *History of the Air Corps Tactical School 1920-1940* (Maxwell Air Force Base, AL: Air Force History and Museums Program, 1998), 8.

[133]Finney, *History of the Air Corps Tactical School 1920-1940*, 25.

ordered there."[134] Ironically, years later, George C. Marshall would attribute Spaatz' Leavenworth experience as one of his most important strengths. Marshall believed the greatest weakness of the Air Corps during World War II was Arnold's air staff. He attributed the weakness of the staff to the shortage of quality "Leavenworth men" noting that the few people Arnold had who understood effective staff work nearly worked themselves to death.[135]

Leavenworth taught the airpower ideas that were promoted by the Air Service, before the creation of the Air Corps. That meant its air curriculum was up to date in 1926, but increasingly obsolescent thereafter as aviation technology continued to advance.[136] The essential aim of the Leavenworth course was not the promulgation of doctrine. The school's core purpose was to prepare young officers for large unit operations—operations that could involve up to two or three hundred thousand men—develop large-scale strategic thinking, and teach them decision making in major operations.[137] This approach would serve particular importance to future airpower leaders, including Arnold.

CGSS provided another significant opportunity for Arnold to network and build relationships with future leaders that would become so important in the coming decade. His education there, combined with his Army Industrial College experience would form the basis of the common language and perspective cited by Starry as vital to success for agents of change. Among his classmates from the Air Corps were future general officers including Majors Frank M. Andrews, John F. Curry, Junius W. Jones, Martin F. Scanlon, and Omar Bradley from the

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[134]David Mets, *Master of Airpower: General Carl A. Spaatz* (Novato, CA: Presidio Press, 1998), 98.

[135]Larry I. Bland, ed. *George C. Marshall Interviews and Reminiscences for Forrest C. Pogue* (Lexington, VA: George C. Marshall Foundation, 1996), 615.

[136]Boyd L. Dastrup, *The U.S. Army Command and General Staff College: A Centennial History* (Manhattan, KS: Sunflower University Press, 1982), 70-72.

[137]Perret, *Winged Victory*, 25.

Infantry.[138] These relationships would not only strengthen Arnold's ability to garner support for his cause of airpower in the Army, they would create a network that would provide inroads into all the services as he continued to rise through the ranks.

As an Air Corps flyer who had been disciplined for his zeal in support of Army aviation, Arnold did not look forward to the scrutiny that would accompany his attendance at CGSS but he was determined to make the best of it. The CGSS curriculum was rooted in the experience of World War I and seemed to minimize the role and potential of airpower. Recognizing this as an opportunity, Arnold reinvented his role as airpower advocate. He applied what he had learned at the Cavalry School to build rapport with his classmates and instructors. Arnold's experience at Fort Riley allowed him to surprise his Cavalry classmates by his understanding of their tactics and relate directly back to the air ground doctrine he had developed the year before.[139]

The planes available for flight proficiency at the school were few and antiquated. Once a month was the best an officer could hope to fly, and when Major Junius Jones managed to crash land a DH-4 into the Missouri River it looked as though even that rate would be lowered. General King was incensed over what he considered an unnecessary accident. He assembled all the Air Corps officers in his headquarters and berated them intently, proclaiming that none of them really knew how to fly. When dismissed, Arnold was the last to leave the room and on closing the door, he said stridently, "You know, that guy doesn't know a damn' thing about flying."[140] Instantly the door swung open and the general stepped out, grabbing Arnold by his Sam Browne belt. "I want you to take that back!" he ordered. Arnold stood firm. "No, General," he said; "you don't know anything about flying, and you can't tell these men when and how they can fly." Which was

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[138]The Command and General Staff School, Fort Leavenworth, Kansas, *Annual Report of the Commandant, Annual Report for school year 1928-1929.* July 1, 1929, 6.

[139]Willbanks, *Generals of the Army*, 158.

[140]Copp, *A Few Great Captains*, 57.

perfectly true, but it took a lot of nerve for a major to stand up to a general officer. King realized it too. From that moment on, he began to change his mind about Major Arnold.[141]

Arnold would remark later that he found CGSS to be of great value, and that he "did not get into many difficulties."[142] Most importantly, he found in retrospect that the school was of value since the course "taught the officers to think … to make decisions after proper sequence of thought."[143] Naturally, he did not agree with many of the school's concepts of air doctrine and thought the course should be modernized.[144] King grew to respect Arnold so much that after Arnold wrote a recommendation to update the curriculum, King incorporated the airpower ideas. He would later write one of the finest efficiency reports Arnold ever read saying that Arnold had been "adaptable, resourceful, and self-reliant with a pleasing personality."[145]

At this point, although his transformation was not quite complete, Arnold clearly was beginning to understand the importance of relationships and reputation to his cause of airpower innovation. Upon completion of CGSS in June 1929, Arnold was assigned to Fairfield Air Depot Reservation (FADR), near Dayton Ohio. There he took command of one of the Army's largest air depots and began his slow deliberate climb to the pinnacle of aviation.[146]

ARNOLD'S LEADERSHIP 1929-1938

Operational Leadership

Arnold's experience at Fairfield was the beginning of the happiest time in his life. The

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[141]Copp, *A Few Great Captains*, 58.

[142]Ibid.

[143]Huston, *American Airpower Comes of Age*, 24.

[144]Arnold, *Global Mission*, 127-128.

[145]Copp, *A Few Great Captains*, 58.

[146]Arnold, *Global Mission*, 127-128.

depot was on the grounds of the former Sims Station where Arnold had learned to fly in 1911 and due to his influence, the field would eventually become Wright Patterson Air Force Base.[147] The Materiel Division there was the center of the Air Corps' procurement and research and development, an area that suited Arnold's skills and experience perfectly. As FADR commander, Arnold supervised the distribution of supplies and the regularly scheduled overhauls of airplanes over three quarters of the continental United States. After the consolidation of the Materiel Division, funding became available for construction of hangar and testing facilities. Arnold could not resist holding an air show for the local populace to celebrate the conclusion of the new construction projects at Fairfield. Shortly after the hangar refurbishing was complete, he opened the gates for a widely publicized Air Corps carnival that featured military bands, dollar airplane rides, fireworks, and a dance. Arnold had learned that winning the support of the local population could head off conflicts that sometimes resulted from airplane noise at all hours of the day and night. The friendly approach he had taken in Dayton preceded events like the massive May 1931 Air Corps maneuvers where more than 650 airplanes and their crews flocked to Wright Field. The local merchants, suffering from the Great Depression, benefited from the influx of aircrew. The engine noise was a small price to pay for such a financial boon.[148]

The purpose of the Air Corps exercise was testing the consolidation of air forces while staging from multiple locations and then evaluating simulated attacks from bases dispersed across the eastern United States. The problem was a logistical nightmare and Arnold, temporarily serving under Brigadier General Benjamin Foulois, the acting First Provisional Air Division commander, was instrumental in managing the prepositioning of essential supplies well before the training began. During the exercise Arnold witnessed the crucial role of logistics and

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[147]Perret, *Winged Victory*, 21.

[148]Daso, *Hap Arnold and the Evolution of American Airpower*, 121.

preplanning during major air force deployments, a lesson that shaped his views of airpower and its application for the remainder of his career.[149]

While Arnold supplied aircraft with parts and materiel, the Army was attempting to redefine the Air Corps' mission. Early in January 1931, Army Chief of Staff General Douglas MacArthur and Chief of Naval Operations, Admiral William V. Pratt, reached an agreement concerning the employment of air forces. In the MacArthur-Pratt agreement, the Air Corps assumed the mission of coastal defense of the United States and other overseas possessions. The Air Corps was to defend the coast while naval aircraft assisted the fleet at sea. Unfortunately, the agreement failed to specify exactly how far offshore Air Corps planes could operate when seeking out an enemy force and it did not have complete support within the Navy, which led to continuing conflict.[150] Anticipating the requirements of this newly approved mission, the Army established bases to stage coastal defense operations. That meant at least one base on each coast and one more centrally located as a reserve for either engaged coastal base. March Field, near Riverside, California became the West Coast base and Arnold was to be its commander.[151]

After serving over eleven years as a major, Arnold was promoted to lieutenant colonel in February of 1931.[152] Three weeks later, he reported to California. At the time, March Field was only a small training base but it would become the home of the 17th Pursuit Group and the 7th Bombardment Group, the largest operational combat unit in the Air Corps. In this assignment, Arnold made the most of his proximity to Hollywood and used his command to publicize airpower at every opportunity. Holding air shows and courting celebrities at March Field put the Air Corps in public view while attracting very favorable press. As he had learned in his time in

[149]Daso, *Hap Arnold and the Evolution of American Airpower*, 122.

[150]Richard H. Kohn and Joseph P. Harahan, eds. *Makers of the United States Air Force,* USAF Warrior Studies (Washington, DC: US Government Printing Office, 1987), 25.

[151]Daso, *Hap Arnold and the Evolution of American Airpower*, 127.

[152]Huston, *American Airpower Comes of Age*, 25.

Washington, positive publicity was key to development of American aviation. In addition to the public relations efforts, this command offered him the opportunity to work with other talented officers destined for the senior ranks including Ira Eaker, Carl Spaatz and Jimmy Doolittle.[153]

The winter of 1932-1933 brought a new requirement for innovation to Arnold's command. Unprecedented blizzards swept across New Mexico, southwest Colorado, southern Utah, and northern Arizona. More than twenty-one thousand Native Americans in villages throughout the area were isolated and faced starvation. There was no way to relieve their plight except by air. Arnold was directed to help in any way he could. He sent men and planes to air drop supplies although none of his men had ever done anything like it before. In fact, nothing like this had ever been attempted before. It was a chance to make a point for airpower and proved quite effective in terms of public relations. The highly successful mercy missions by Arnold's bombers received favorable publicity and built Arnold's reputation as an effective leader and innovator.[154]

Arnold's next mission challenge would once again put him at odds with his commander. On 10 March 1933, Long Beach experienced a massive earthquake that killed some 115 people and caused $40 million in damage. Arnold immediately authorized the use of Army trucks and supplies and dispatched them to the disaster area. However, use of Army materials for such an effort fell under the authorization of the Ninth Corps Area, commanded by General Malin Craig in San Francisco. Craig summoned Arnold to his office to explain his actions so Arnold flew up to meet with Craig the next day. After some discussion, Craig came away with a favorable impression of Arnold, forgave the infraction, and established a friendly professional relationship. Nothing further came of Arnold's unauthorized use of equipment. Arnold did not know at the

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[153]Willbanks, *Generals of the Army*, 161.

[154]Foulois, *From the Wright Brothers to the Astronauts*, 226.

time but he was establishing a rapport with a future Army chief of staff.[155]

For Arnold, building March into a major operational base was thoroughly satisfying. In addition to his command duties, Arnold became heavily committed to President Roosevelt's Civilian Conservation Corps program. The Army created and ran camps and Arnold supervised the scores of projects throughout California employing over fifteen thousand workers. This was yet another example of Arnold's innovative leadership that would test his ability to manage large numbers of men and equipment and coordinate logistics over large areas. Arnold's efforts in this regard began to gain the attention of senior leaders in Washington and would eventually serve to benefit his selection for higher command. [156]

In February 1934, Major General Benjamin Foulois, Chief of the Air Service, committed the Air Corps to carrying the airmail after President Roosevelt cancelled all contracts due to a Senate investigation into the handling of federal airmail contracts. The Air Corps lacked the right training, the right planes, and the right navigational equipment for this venture. While civilian aviation enterprises were driven by market forces to expand their capabilities and were fully funded to do so, the Air Corps struggled to modernize and keep pace with improving aviation technologies including all weather navigation systems and more powerful engines. In the course of the operation, twelve pilots lost their lives due to bad weather and aircraft performance issues, earning Foulois the contempt of the president and the press over his handling of the operation. Arnold however, managed to make it through the operation unscathed. Ten days after the initial call for action he had organized five hundred men, 148 airplanes and necessary ground equipment at the central points along selected routes. The Air Corps logged more than thirteen thousand hours of flying time, flew more than 3 million miles, carried more than seven hundred seventy

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[155]Willbanks, *Generals of the Army*, 161.

[156]Perret, *Winged Victory*, 22.

thousand pounds of mail, and set a number of speed records.[157] Nevertheless, what made headlines were the many failures. The sudden need to provide a national service, and the subsequent tragedies, proved how shaky Army airpower was as nothing else could have done short of war itself.[158]

By the time the airlines resumed flying the mail in May 1934, the Air Corps was looking for a way to restore public faith in its flying ability. The logical choice was another record-breaking flight. Assistant chief of the Air Corps, Brigadier General Oscar Westover, decided to lead a round trip from Washington, DC, to Alaska in order to show off the Army's first modern bomber, the Martin B-10. When, at the last minute, Westover decided to pass on the mission, Foulois ordered Arnold to lead the flight. The result was an incredible aerial odyssey of formation flying but Arnold added his own personal twist. On the return leg, he took the flight nearly one thousand miles over open water between Juneau and Seattle. This action, an apparent violation of the MacArthur-Pratt agreement, would cause Arnold some friction with the Chief of Staff.[159]

When the Air Corps recommended that all the Alaska flyers be awarded the Distinguished Flying Cross (DFC), MacArthur disapproved the requests. However, based on the record-breaking flight, Arnold received his second Mackay Trophy in 1934 and two years later, following MacArthur's retirement, he received a DFC as well. Certainly, the Alaska flight did wonders for Arnold's future. Despite his minor setback with MacArthur, this was the final turning point where he was accepted into the senior leadership of the Air Corps.[160]

On 17 April, while the Army airmail operation was winding down, Congress established the Baker Committee to investigate the failings in the airmail operation. In its final meeting, the

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[157]Glines, *The Compact History of the United States Air Force*, 130.

[158]Foulois, *From the Wright Brothers to the Astronauts*, 26.

[159]Perret, *Winged Victory*, 23-24.

[160]Ibid., 23-24.

committee recommended that, in order to address the concerns of administration and command and control, the Army should create a General Headquarters (GHQ) Air Force, made up of air combat units and capable of operating either independently or in cooperation with the ground air forces.[161] By that summer, General Headquarters Air Force would take control of all the tactical units with its commander reporting directly to the Chief of Staff. The Chief of the Air Corps would control administration, supply, research and development, and schools. MacArthur imposed this solution on Foulois in 1934 by making it part of a larger restructuring of the Army. The GHQ Air Force's first commander was Brigadier General Frank Andrews, Arnold's old CGSS classmate.[162] Andrews organized his command into three wings, the largest, based at March Field, was the First Wing, commanded by Arnold and comprising all the tactical units between the West Coast and the Rockies. Arnold already commanded these units but the formation of a wing brought a temporary promotion to brigadier general.[163]

In late 1935, there were a number of changes in Army senior leadership. General Craig was appointed Army chief of staff and General Oscar Westover replaced Foulois as chief of the Air Corps following the negative findings of the Baker Committee. Both incoming generals knew of Arnold's professional abilities and his experience in logistics and industry.[164] After commanding the First Wing for nine months, Arnold was summoned to Washington to serve as Westover's deputy.[165]

The principal mission MacArthur gave GHQ Air Force was coastal defense. Andrews organized major exercises that shifted hundreds of aircraft on short notice to coastal areas that

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[161]Foulois, *From the Wright Brothers to the Astronauts*, 26.

[162]Perret, *Winged Victory*, 29.

[163]Foulois, *From the Wright Brothers to the Astronauts*, 270-272

[164]Willbanks, *Generals of the Army*, 163.

[165]Perret, *Winged Victory*, 30.

were under simulated attack. Andrews's efforts benefitted from the increasing size of the Air Corps. In creating GHQ Air Force, the War Department accepted the need for more planes and at the same time, the Roosevelt administration was putting more money into base construction as an adjunct of the New Deal's public works program. The lean years under Foulois gave way to expansion under Westover. Wright Field issued contracts for new bombers as well as pursuit, attack, and observation planes. As standards and resources increased, so did morale and Air Corps capabilities. Unfortunately, the MacArthur-Pratt agreement became a source of renewed conflict. The Navy was concerned that Army aircraft capabilities would enable them to extend their influence far out to sea. The day was coming when bombers would extend their range to thousands of miles, which began to challenge the Navy's relevance as the nation's primary defender.[166]

Admiral Fletcher, Pratt's successor as chief of naval operations repudiated the agreement with MacArthur and argued that coastal defense began on land, not over water. Andrews did nothing to reassure the Navy. On the contrary, GHQ Air Force's mission as he saw it was to attack the enemy far out to sea, striking his aircraft carriers or his island bases. The Army's newest bomber, the B-17 was sold largely because it could defend such vulnerable areas as Alaska, the Philippines and the Panama Canal by sinking hostile fleets far from shore. Andrews took up the cause in true Billy Mitchell fashion and demanded that the Air Corps should have only one bomber, the heavy, strategic four-engine kind. In doing so, he inflamed both the Navy and the Army senior leadership. Under pressure from the Navy, in 1938, Malin Craig gave instructions that the Air Corps would no longer fly more than one hundred miles from shore. At almost the same time, the General Staff ruled that the Air Corps would get no more four-engine

[166]Perret, *Winged Victory*, 31.

bombers. Plans for expanding the B-17 program were shelved.[167]

Strategic Leadership

Arnold played no real part in this dispute over the acquisition of four engine bombers. He was now very aware of his own reputation and seemed to be keeping his head down. In fact, he was something of a Malin Craig protégé by now. He had seen the damage wrought by the Billy Mitchell approach and had matured to the point where he understood when and how to fight such battles. However, his tenure as Westover's assistant would last less than two years.[168] On 21 September 1938, Oscar Westover was killed coming in to land at Burbank airport flying an A-17. His plane stalled and crashed into a house three hundred yards short of the runway. Arnold's status was unknown for eight days while the president reviewed his options. Within the Air Corps, there were a half a dozen officers who were senior to him. Roosevelt seemed reluctant to appoint Arnold to succeed Westover. His main competition and good friend Frank Andrews, was not only senior but enjoyed the strong backing of the President's military adviser, Major General Edwin Watson. There were also rumors against Arnold that made him out to be a drunk. In fact, all he drank was sherry, usually a glass or two of Amontillado before his afternoon nap. The story was easily refuted but more importantly, Malin Craig, Arnold's new mentor, disliked Andrews personally for his Billy Mitchell tactics. It was rumored that Craig informed the President he would resign if Andrews got command of the Air Corps. Whether or not the rumor was true, there was little doubt that Craig lobbied hard for Arnold's appointment. Arnold also had the staunch backing of many of the country's leading industrialists, including Donald Douglas, a man who sometimes stayed at the White House when he visited Washington. On other occasions, Douglas stayed with the Arnolds. One way or another, on 28 October, Arnold transitioned from his role as

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[167]Perret, *Winged Victory*, 31.

[168]Willbanks, *Generals of the Army*, 163.

acting chief to Chief of the Army Air Corps. The assignment came at a high personal price for Arnold. Craig ordered him to stop flying airplanes. Arnold would never handle a takeoff or landing again. On the ground, he ran the Air Corps. In the air, aboard his personal DC-3, he could not fly as anything but a copilot or passenger.[169]

Arnold's Legacy

On September 3, 1939, Great Britain declared war on Germany. France reluctantly followed suit the same day. The Second World War had begun. One year before, during September 1938, British Prime Minister Neville Chamberlain had made three trips to Germany to seek peace. Intimidated by the strength of Hitler's airpower, Chamberlain yielded to Hitler's demands regarding Czechoslovakia. Hitler had promised that he would make no further territorial demands in Europe and Chamberlain gave his infamous "… it is peace for our time" speech. George Fielding Eliot, noted military author, disagreed. "It is blackmail," he said, "blackmail made possible only by the existence of airpower." On 28 September 1938, as the news of Chamberlain's final trip to Munich arrived, President Roosevelt called a meeting of his top military advisors including General George Marshall, General Malin Craig, Secretary of the Navy Edison, Secretary of War Woodring, and acting Air Chief, Brigadier General Hap Arnold.[170]

To everyone's surprise, especially Arnold, the President announced that the purpose of the meeting was to discuss airpower. He came right to the point: "I want airplanes, now, and lots of them," he said. At some moment since Billy Mitchell's last visit to the White House in 1935, the president had finally understood the significance of airpower. He wanted ten thousand first-line fighting planes in production in 1940 and twenty thousand the next year. He figured the cost at about $300 billion, including the cost of airfield construction and training personnel.

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[169]Perret, *Winged Victory*, 32.

[170]Glines, *The Compact History of the United States Air Force*, 145-147.

Considering the battles for airpower of the previous decades, this announcement seemed unbelievable to Arnold. He knew airpower's fate had turned a corner. He later wrote, "A battle was won in the White House that day…which took its place with or at least led to the victories in combat later."[171]

Focused on the expansion of the Air Corps, Arnold understood that the growth of the service also required extensive cooperation with various elements of the civilian sector. To modernize the air fleet, the Air Corps needed to leverage civilian scientists, engineers, and designers. Aircraft manufacturers would need to improve, and substantially increase, the number and size of factories and facilities, as well as the rates of production. The Air Corps would have to use civilian facilities, airports, and instructors to increase military training capacities. Before America's entry into the war, the Air Corps produced approximately seven hundred fifty pilots a year but to support the entire war effort it needed as many as one hundred thousand trained aviators. These tasks needed to be done at a time when the country was not yet at war and the funding floodgates had yet to be opened. Before American participation in the war began, Arnold initiated the greatest mobilization in aviation history. He began at a feverish pace setting up training programs, working with congressional leaders on legislation, and reorganizing the Air Corps for the upcoming hostilities.[172]

In his post-World War II report to the Secretary of War, General of the Army Arnold encapsulated the contribution of industry to airpower:

> Airpower is not composed alone of the war-making components of aviation. It is the total aviation activity – civilian and military, commercial and private, potential as well as existing. Military airpower or air force – is dependent upon the air potential provided by industry, which in turn, thrives best in an atmosphere of individual initiative and private

[171]Glines, *The Compact History of the United States Air Force*, 145-147.

[172]Willbanks, *Generals of the Army*, 166.

> enterprise. Governments can do much to increase this air potential by judicious use of its coordinating and planning powers. [173]

In this statement, gone are the embers of revolution as spouted by Mitchell and gone are the remnants of separation and independence for an air force. Instead, the evolution of the man and the organization continued as Arnold grew into the strategic leader and innovator the nation and his cause required. Arnold would go on to command all Army Air Forces during World War II, championing the cause of airpower, technology development, strategic airpower doctrine, military-industry partnership, civil-military research and development, and would ultimately be ranked as the only five-star General of the Air Force in history.[174]

The Air Force owes much of its very existence to Arnold and his belief in airpower. Despite his lack of real combat experience, he fought other kinds of battles in Washington, in the halls of Congress, in aviation factories, and in corporate boardrooms to create an innovative air force. Though his battles were less glamorous, and certainly less exciting, they were no less important than those fought in overseas theaters. His victories and the legacies he established last to this day.[175]

CONCLUSION

Although Brigadier General William "Billy" Mitchell was a true airpower visionary, well ahead of his time, his revolutionary approach was a disaster for Army aviation. Mitchell's boss, Major General Mason Patrick, Chief of the Air Service, endorsed Mitchell's views of innovation but the conservative War Department leadership much better received Patrick's approach. At the same time, Admiral William Moffett, chief of the Navy's Bureau of Aeronautics took a more effective evolutionary approach to Navy airpower innovation. Moffett's approach led the Navy

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[173]Mason, *Air Power: A Centennial Appraisal*, 245.

[174]Daso, *Hap Arnold and the Evolution of American Airpower*, 212-214.

[175]Willbanks, *Generals of the Army*, 178.

down the path to total air and sea integration. His approach led to the development of carrier forces that came to dominate naval battles in the Pacific Theater during World War II and continues to be the most important element of seapower today.[176]

Billy Mitchell's approach was a source of friction that touched every corner of aviation. Between 1921 and 1925, while Moffett was working to integrate airpower into the fleet Navy, both Mitchell and Patrick were working toward the goal of an independent air force. Mitchell wanted immediate independence while Patrick pursued Congressional support for a slow and deliberate separation over five years. Patrick quietly worked from within the Army system as a trusted insider while Mitchell was bypassing legitimate authority by stirring up the attention of Congress and the press. Public opinion was an essential ingredient in Patrick's plan and he initially even encouraged some of Mitchell's exploits. However, he found he could not always control Mitchell and the results often turned out worse than either of them expected.[177]

The Air Corps Act of 1926 failed to achieve Mitchell's overall goal. It made the air arm a corps rather than a service and gave it only limited autonomy. It did however provide additional personnel, an expanded grade structure, and guaranteed the primacy of flying officers in command positions. The War Department established an Assistant Secretary of War for Aviation and an air staff manned by aviators. Although not completely satisfied, Patrick saw the law as an interim step towards complete independence for his air force.[178] A strategic approach to innovation, unencumbered by the destabilizing effects of Mitchell's revolution campaign would have fared much better for the cause of airpower.

Moffett's evolutionary approach to innovation, when compared to the more simplistic Mitchell vision, was truly remarkable. The difference was that Moffett did not have an antagonist

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[176]Ivy, "The Paradoxical Paradigm," 38.

[177]Trimble, *Admiral William A. Moffett*, 9-11.

[178]Ibid., 18-22.

like Mitchell inside his organization. Arnold not only had to contend with the vast challenge of implementing change into a large organization, he had to do so while overcoming the biases created by the legacy of rebellion created by Billy Mitchell. Arnold, as one of Mitchell's followers felt as he did, but Arnold tried to unify airpower in the combat environment with teamwork and competition as he had done at Fort Riley and Rockwell Field. Arnold later reflected that in retrospect he did not believe officials in the War Department profited much, if at all, from the Mitchell "period of influence on air development. If anything, they seemed to take an even narrower point of view of aviation as an offensive power in warfare. The Navy on the other hand made a study of the entire affair and became air-minded across the culture."[179]

By the time Billy Mitchell resigned, Hap Arnold had been in the Army for over eighteen years. He had watched as his mentor lashed out at his superiors and the Army institution and had even come to admire some of Mitchell's techniques. However, as he gained experience as a commander and staff officer, Arnold was able to see what worked for Moffett and Mason and what did not work so well for Mitchell. His time at the Army Industrial College taught him the value of collaborating with industry and civilian innovators, and his experience working as Patrick's Information Officer brought him a behind the scenes view of the inner workings of Congressional and Army politics and the power struggles between Army and Navy leadership.[180]

This was the beginning of Arnold's repentance. Destined to be a maverick following his very strict upbringing, Arnold was drawn to the charismatic leadership of Mitchell and he believed in the greater cause of airpower.[181] Arnold witnessed how the public pressure Mitchell generated led to the political support necessary for the Air Corps Act. Nevertheless, this same

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[179]Arnold, *Global Mission*, 122.

[180]Coffey, *HAP*, 115-125.

[181]Ibid., 12-16.

pressure also led to the law's conceding nature. Mitchell's revolutionary approach polarized opinions within government and the American public and divided his cause rather than unite it.[182]

Mitchell's problems occurred because he did not understand how to effect change from within the organization and he went outside to get help from the Congress and the media to make his vision a reality.[183] In the end, it is clear that innovation is about more than simply a good idea or invention—it is about vision, leadership, and relationships. From the low point in Hap Arnold's career, his exile to Fort Riley in 1925, to his miraculous turn around at CGSS, Arnold never looked back. He continued his mission of innovation focusing on the process of evolution of Army aviation while divorcing himself from the culture of revolution of the Billy Mitchell era.

This study has demonstrated the effectiveness of Hap Arnold's approach to innovation as measured against the standard of Starry's model. In spite of the turbulent times, demobilization, restricted resources, the Great Depression, and the divisive legacy of Billy Mitchell and his followers, Arnold knew, or was able to learn, the fundamentals of organizational change. Arnold formed and adapted a unique vision for the future of airpower as Kotter recommends and despite his association with Mitchell was able to avoid the pitfalls of under communication and inconsistent messaging. From the beginning, Arnold understood the value of trust, both internally and externally to the organization, as noted by Covey. He understood maintenance of trust with senior leaders such as Booth, King, Fetchet, Craig and Marshall and civilian political leadership such as Davison and even President Coolidge was critical to the survival of his cause. Arnold's education was crucial to creating the consensus necessary to achieve his vision. His experience at the Army Industrial College framed his understanding of the critical role of civilian and industrial partnerships to the innovation of airpower and he actively sought the opportunity to attend CGSS

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[182]Tate, *The Army and its Air Corps*, 43.

[183]Ivy, "The Paradoxical Paradigm," 38.

to expand his military professional education and deepen his professional relationships. Finally, as the true spokesperson for change, Arnold learned gradually to distance himself from the revolutionary reputation associated with Billy Mitchell and work for change from within the Army institution.

As previously noted, the Army has grown to accept the inevitability of change and has even codified the notion in its most recent doctrine. However, in spite of the organization's evolving openness towards innovation, the Army continues to struggle as it did in the interwar years with almost constant paradigm shifts. This study provides a good example of a successful approach to innovation. Hap Arnold, although he had some early setbacks, ultimately prevailed in his cause of innovation, and should serve as an example of the most effective approach to innovation and organizational change during times of dramatic transition.

APPENDIX A: EARLY EVOLUTION OF ARMY AVIATION

Balloon Corps of the Army of the Potomac
Created on 25 September 1861 by the Secretary of War. Professor Thaddeus S. C. Lowe was named Chief Aeronaut, a civilian position. The Balloon Corps was disbanded in June 1863.
Balloon Section of the Signal Corps
Created in 1892 by Brig Gen Adolphus W. Greely, Chief Signal Officer. This was the first military aeronautic organization in the U. S. Army.
Aeronautical Division of the Signal Corps
Created on 1 August 1907 by Office Memorandum No. 6 at the direction of Brig Gen James Allen, Chief Signal Officer of the Army.
Aviation Section of the Signal Corps
Created on 18 July 1914 by Congress. At the same time, Congress established the aeronautical ratings of Junior Military Aviator, Military Aviator, and Aviation Mechanic.
Bureau of Aircraft Production and Division of Military Aeronautics
These two agencies were created on 21 May 1918 by President Wilson and placed directly under the Secretary of War.
Air Service
Created on 24 May 1918 when the War Department recognized the Bureau of Aircraft Production and the Division of Military Aeronautics as a single agency, the Air Service. A chief of Air Service was not named, but on 27 Aug 1918, the position of Director of Air Service was formed. The director was also the Second Assistant Secretary of War.
Air Corps
Created by Congress by the Air Corps Act of 2 July 1926. The act also created the position of Assistant Secretary of War for Air.
General Headquarters Air Force
The War Department ordered that the GHQ Air Force would be created by 1 March 1935 to assume control over tactical units and to come directly under the General Staff. It existed side by side with the Air Corps. Differences arose between the two commands. On 1 Mar 1939, GHQ Air Force was made responsible to the Chief of Air Corps rather than the General Staff.
Army Air Forces
Created by Army Regulation 95-5, dated 20 June 1941. AAF was headed by a chief who was also Deputy Chief of Staff for Air. In March 1949, 82% of the officers and 77% of the enlisted men of the AAF were from the Air Corps while the rest belonged to the Signal Corps, the Corps of Engineers, the Quartermaster Corps, and other arms and services with the AAF. On 9 March 1942, the War Department created autonomous and co-equal commands within its framework: the Army Ground Forces, the Army Air Forces, and the Army Service Forces. The office of Chief of Air Corps and the Air Force Combat Command were dissolved. All elements of the air arm were incorporated into the AAF under a single commanding general and a single air staff.
Army Aviation
Created on 6 June 1942 when the War Department approved Field Artillery organic aviation. The new program came under the direction of the Field Artillery and the Army Ground Forces. It was to supplement the existing system of air support, and specifically to provide air observation for the adjustment of artillery fire.
U. S. Air Force Created on 26 July 1947 as directed by the National Security Act of 1947.[184]

[184] Tierney, *The Army Aviation Story*, 38.

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